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JPRS Report

Environmental Issues

Environmental Issues

JPRS-TEN-91-012

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PRC Envoy Zhu Qizhen Urges Close Ties With U.S. on Environment

*OW0606081091 Beijing XINHUA in English
0549 GMT 6 Jun 91*

[Text] Washington, June 5 (XINHUA)—Chinese Ambassador to the United States Zhu Qizhen today called for close cooperation between the two countries on environmental protection.

Speaking at a ceremony marking world environmental day, Zhu said: "Environmental protection is now a basic national policy of China, centering on prevention and on combining a healthy environment with economic and social development."

"Improving the environment is an enormous undertaking which calls for the enhancement of people's environmental awareness and the common effort of people throughout the world to combat pollution."

He said: "China is willing to cooperate with governments and peoples all over the world to create a sound global environment."

"It is our sincere hope that China and the United States will continue the cooperation, and work closely together in the area of environmental protection, and contribute to the common cause of preserving a healthy and sound environment for the benefit of all mankind."

Tina Hobson, executive director of "Renew America", a U.S. environmental clearinghouse which co-sponsored tonight's event with the Chinese Embassy, said the organization aimed to strengthen ties between United States and Chinese environmental protection workers.

More than 200 Americans attended the event, which was also held in honor of winners of the national environmental achievement awards. These were given by a group of 28 U.S. environmental protection organizations to American citizens with outstanding contributions in environmental protection.

USSR Emissary Supports Kenya's Stand on UNEP Transfer

*EA0306091091 Nairobi KNA in English 1815 GMT
28 May 91*

[text] Nairobi, 28 May (KNA)—The Soviet Union (USSR) deputy minister for natural resources management and environmental protection, Mr. S. Tsurikov [name and title as received], today reaffirmed his country's support on Kenya's stand on transfer of UNEP [United Nation Environment Program] headquarters to Geneva. Conferring with the Kenyan minister for environment and natural resources, Dr. Mungai, in his office, Mr. Tsurikov said his country was not supporting the decision to transfer some key sections of the organization out of Nairobi.

Dr. Mungai registered his appreciation to Soviet Union, saying it would be better if other countries would do the

same. The deputy minister presented Dr. Mungai with three papers from his minister, Mr. N. Vorontsov, on areas in which the two countries could cooperate. The USSR is seeking bilateral cooperation on biological diversity, technology on health and technology on enhancement and preservation of environment. Also present was the Russian ambassador to Kenya, Mr. Vladimir S. Kitayev.

French Parliament Proposes UN Ecosystem Watchdog

91WS0311X Paris LE MONDE in French 18 Apr 91 p 14

[Article by Catherine Vincent: "Parliamentary Report Proposes Creation of International Biosystem Observatory"]

[Text] A report by the Parliamentary Office for the Evaluation of Scientific and Technical Decisions takes stock of the applications of biotechnology to agriculture and the food-farming industry and proposes the creation of an international biosystem observatory.

Biotechnology

Although it can't be seen on our dinner plates, it makes crops grow, improves livestock, and could help solve the problem of hunger in the world. Just 20 years ago, the term itself was unknown: "the use of biological organisms, systems, and processes" for "industrial, manufacturing, and service" purposes. So the topic of the report goes far beyond the use of genetically modified organisms, which in France is controlled by the biomolecular engineering commission (LE MONDE, 11 April). In order to produce this document, Mr. Daniel Chevallier, deputy from the Hautes-Alpes and a trained researcher, sought the opinions of several dozen French and foreign scientific and industrial leaders. The resulting 25 recommendations cover research, education, public information, patentability, and regulations on experimentation.

According to Mr. Chevallier, "These new techniques should not entail deep-seated changes in the farmer's work, but they will call for significant changes in his relations with his suppliers and, further down the line, with the industries to which he supplies raw materials. It is therefore absolutely necessary to involve the farming community in this movement as soon as possible, particularly through its own organizations."

Sooner or later, the food-farming industry (IAA) will also have to adapt to the introduction of these new techniques. The United States and Japan have known this for some time, and are devoting more and more research to biotechnology. In France, the situation is more serious. As the Economic and Social Council pointed out in its report on the status of research in France, "The IAA is the red light among French industries, devoting only 0.78 percent of its added value to research, as compared to 2.8 percent for other industries as a whole."

Ecological Debate

Overall, the food-farming industry spends some 1.2 billion French francs [Fr] a year for research, about 0.2 percent of sales—less than Nestle, scarcely more than General Foods. In Chevallier's opinion, "This situation makes it extremely necessary to involve the INRA [National Agronomic Research Institute] in basic transferable research."

Another debate revolves around ecological concerns: Is the introduction of genetically modified plants or micro-organisms (OGM) into the natural setting hazardous to the environment? To date, although current experiments are surrounded by all the required precautions, no scientist or manufacturer is capable of answering that question in the negative. As a result, the Parliamentary Evaluation Office emphasizes the need for research organizations "to determine as accurately as possible the potential consequences of unleashing OGMs in the global ecosystem," in order to produce a model "which could be used to analyze and correct accidental occurrences."

The last suggestion of the report involves the creation at the international level of a specialized UN organization, a sort of "international bio-equilibrium observatory." Among other things, it would be responsible for monitoring and controlling the decline of genetic diversity. The uniformization of plant and animal species could actually have serious consequences on ecosystems. The results can already be seen in developing countries, where the supply of high-yield hybrid seeds to farmers has accelerated the disappearance of food crops and local varieties, thereby contributing to the impoverishment of the countryside and encouraging the exodus towards urban areas.

Note: This report was presented at Bioexpo 90, held in Paris, 9-12 April.

Conference Examines Baltic Environmental Projects

PM0306150491 Gdansk DZIENNIK BALTYCKI
in Polish 25-26 May 91 pp 1-2

[Report signed "(ken)": "How To Transform our Imagination?"]

[Text] "What unites us is our struggle for clean water, for large, healthy fish, and for a clean sky," is the message from the second conference of Coalition Clean Baltic [CCB], which took place in Jurata on the Hel Peninsula.

The conference was attended by representatives of all Baltic states. In addition, an invitation to attend was extended to Karin Zaunberger, European Parliament member for Belgium. Yesterday conference participants met with media reporters at Gdansk's Hevelius Hotel.

The appearance of jersey-clad foreigners, who tended to carry rucksacks rather than formal briefcases, in the imposing halls of this exclusive—by Gdansk standards—

hotel was not greeted with particular surprise. The CCB groups together some 20 extra-governmental organizations—hence the unconventional dress sported by participants at this international symposium. As we were told by Tomasz Parteka, head of the ECOBALTIC Foundation, one condition of CCB membership is independence from government agencies. On the other hand, much amazement was caused by the news of the arrival for the conference of representatives of Lithuania, Estonia, Latvia, and Russia, who had to overcome many difficulties to come here. For example, Lithuania's Ramunas Pavilanskas had great trouble in obtaining the document authorizing him to travel abroad. "They print rubles instead of passports in Moscow these days," he joked.

Despite the operation of printing more and more banknotes in the Soviet empire, the main source of financing any ecology-oriented environmental research and investment projects in that country can be traced to... Swedish coffers.

CCB chairman Olle Linden advised the conference that the Swedish International Development Agency allocated almost 9 million kronor to Baltic states for assistance in their environmental protection projects. Among other targets, the funds are to be used for the promotion of ecological awareness. To this end, the CCB commissioned a book entitled: "What Is Happening to the Baltic?" It has already been translated into Polish and negotiations over its publication are now under way.

To the question: "What advantages can the benefactors from the Scandinavian Peninsula who financially assist such poor countries as Lithuania, Latvia, Estonia, or Poland, derive from such a conference as that which they had just attended?", Sweden's Gunnar Noren, CCB secretary, replied that his country commanded the longest shoreline on the Baltic and that for this reason Swedes were interested in keeping the Baltic clean, as "this sea is situated right at the heart of Europe." Moreover, Scandinavians are also concerned about the health and wellbeing of citizens of other countries. There is much anxiety over the situation in Estonia, where it has been found that stored radioactive uranium waste causes children's hair to fall out. Estonia has no uranium mines. This dangerous element is shipped there from other areas and used for the requirements of the Soviet Army.

One of the objectives of the CCB's activity is to formulate original environmental protection programs alternative to those prepared by governmental projects. For example, as an alternative to an official project envisaging the construction of several hundred large effluent treatment plants in cities and villages, the CCB has presented blueprints for small effluent treatment facilities based on the natural root action of certain plants (several species of the willow), and also for the construction of biological barriers which restrict the efflux of fertilizers and plant protection agents from the soil to neighboring rivers and lakes.

Two Polish extragovernmental organizations—namely, the Polish Ecology Club (represented at the conference by, among others, Andrzej Baranowski of Gdansk Polytechnic) and the ECOBALTIC Foundation, both of which acted as co-organizers of the CCB conference—presented their individual alternative environmental protection programs based on the idea of "ecodevelopment." Unfortunately, to many ordinary citizens the term "ecodevelopment" denotes no more than the idea of eating so-called health food and having to observe a ban on washing their cars in the river. This is why it is necessary to transform and reshape many people's imagination—including that of many politicians, officials, and all those whose decisions can influence the condition of the environment.

CSFR, Austrian Leaders Meet on Ecology Issues

*LD2705173391 Prague CTK in English 1456 GMT
27 May 91*

[Excerpt] Prague May 27 (CTK)—Czechoslovak Deputy Foreign Minister Zdenko Pirek and Austrian Ambassador to Czechoslovakia Karl Peterlik today signed a note on improving the flow of information between the two countries in case of incidents in nuclear power plants.

The note, which specifies one article of a Czechoslovak-Austrian agreement on nuclear safety and protection against radiation, was signed in the presence of Czechoslovak Premier Marian Calfa and Austrian Chancellor Franz Vranitzky.

Calfa, Vranitzky and Prague Mayor Jaroslav Koran signed a statement on the intention to open an Austrian grammar school in Prague, with German and Czech as the languages of instruction.

"I do not want our talks to be considered exclusively 'nuclear'", Vranitzky said during a meeting between the Czechoslovak and Austrian delegations today, according to Czechoslovak Government spokesman Martin Kopecky.

Vranitzky agreed to Calfa's proposal that questions of nuclear safety be transferred from the bilateral level to the Pentagonal group (Austria, Czechoslovakia, Hungary, Italy, Yugoslavia), Kopecky said.

Calfa provided detailed information on steps being taken at the Jaslovské Bohunice Nuclear Plant near the Austrian border. (Austria has repeatedly demanded its shut-down.) The plant will be closed for a thorough inspection in 1993 and a final decision on how long it will remain in operation will not be taken until then. In any case, it will operate until at least 1995, Calfa said.

He spoke about the Gabčíkovo water works on the Danube, originally a joint Czechoslovak-Hungarian project now half completed, which could substitute for electric power produced at Jaslovské Bohunice. Calfa mentioned the importance of the project for Danube

navigation and spoke about its environmental aspects. He noted that Hungary was not fulfilling its contractual obligations. (Hungary unilaterally withdrew from the project, which Czechoslovakia says will cause less environmental damage if completed in some form than if left as it is.) [passage omitted]

Austrian, Slovak Leaders on Nuclear Power Concerns

*LD2805193391 Prague CTK in English 2146 GMT
27 May 91*

[Excerpts] Bratislava May 27 (CTK)—Austrian Chancellor Franz Vranitzky praised today the public statement of Slovak Premier Jan Carnogursky that the fears of the Austrian population about the operation of the nuclear power plant at Jaslovské Bohunice "are being taken seriously in Slovakia".

Speaking to journalists after his talks with Carnogursky and other Slovak government officials Vranitzky said "it had not always been so. At the beginning we repeatedly heard that the Bohunice power plant is safe and there is nothing to talk about".

According to Vranitzky, the present stands have been reached thanks to Austria's consistency but he praised the willingness of the Czechoslovak partners to cooperate. "Our ideal would be to achieve a complete shut-down of the nuclear station, but we cannot expect this nor force anyone to do it". He will try to remove all factors causing uncertainty of the Austrian public, he said.

Slovak Premier Jan Carnogursky said the Austrian public should not consider it an ignorance on the Czechoslovak side that it has not yet accepted the demand that the plant be shut down. The steps to increase its safety, which were approved by the Czechoslovak atomic energy commission earlier this month, guarantee that it will now be up to international standards. "Austrian experts have and will have access to the plant to see for themselves that its operation is safe", Carnogursky said.

Speaking about the hydroelectric power project on the Danube at Gabčíkovo, Carnogursky noted that Czechoslovakia has already made considerable investments in it, while the Hungarian side unilaterally withdrew. No final decision has been taken because expert analyses of environmental impacts are under way and will be concluded within several weeks. A decision to put a power station into operation on Czechoslovak territory would not mean higher consumption of waters from the Danube, he said. [passage omitted]

After his talks in Slovakia, Vranitzky ended his one-day visit to Czechoslovakia and left for home.

Soviet Military Deny Ecological Damage in Mongolia

LD2705165391 Moscow Radio Moscow World Service in English 1210 GMT 27 May 91

[Text] The withdrawal of Soviet troops from Mongolia has entered its third stage. Here's a dispatch sent in by Radio Moscow correspondent in Ulaanbaatar Vladimir Korolev:

The Soviet military contingent was stationed on the territory of the People's Republic of Mongolia in accordance with a corresponding agreement signed by the governments of both countries. With the improvement of the international climate, consolidation of trust between countries and their desire for mutual cooperation, it was no longer necessary to keep the Soviet force in Mongolia. It was also made possible by the normalization of relations between the USSR, Mongolia, and the People's Republic of China.

According to the Soviet Command, the complete withdrawal of the Soviet military contingent will be concluded this year already, that is, ahead of schedule. Dozens of Soviet military garrisons with living quarters, schools, canteens, medical posts, and trade complexes have been handed over to Mongolia for free use. This is obviously a great help to the Mongolian people living through a period of an acute economic crisis.

Meanwhile, even such a positive factor as the withdrawal of troops is being used by some groups in Mongolia to cloud Soviet-Mongolian relations. Thus the Mongolian Green Party has called on the government to make an estimate of the damage ostensibly caused by the Soviet military units to the environment and to demand compensation. According to the party leadership, the Soviet troops are leaving the sites of their former location in disorder, violating ecological norms. Their statement,

however, has been denied by the chief of the group supervising the withdrawal, General (Mezun). Addressing a news conference in Ulaanbaatar he said that in fact the territory formerly occupied by the Soviet formations is being returned in complete order. This is confirmed by a special ecological commission provided with powerful engineering equipment.

Nevertheless, attempts by some Mongolian circles to make political capital on groundless criticism of the Soviet military cannot overshadow the fact that the withdrawal of Soviet troops from Mongolia is normalizing the situation in the region and throughout Asia.

New Method for Cleaning Up Oil Slicks Developed

91WN0465B Tehran KAYHAN INTERNATIONAL in English 27 Apr 91 p 2

[Article: "New Method of Cleansing Oil Slick"]

[Text] Madrid (IRNA)—Bahram Mobasser, an Iranian engineer living in Spain, has devised a new chemical formula for cleansing oil slicks.

Mobasser, speaking to IRNA here Thursday, said his discovery includes a mineral which is reactivated by another chemical substance which absorbs crude oil floating on sea waters.

He said he successfully carried out the test by installing on a sea vessel a machine containing the compound, which sucked crude oil from the waters 10 to 15 minutes after it was poured into the sea.

"The existing substances absorb about 90 percent of the salt water as well, while the new substance takes in only the crude," added Mobasser.

REGIONAL AFFAIRS

OAU's Salim Reports on African Environmental Issues

AB2805223691 Dakar PANA in English 1742 GMT
28 May 91

[Text] Abuja, 28 May (PANA)—Efforts to safeguard Africa's environment can be meaningful only if they are linked to the whole question of development, OAU Secretary General Salim Ahmed Salim said in Abuja Tuesday.

In an introductory report on the activities of the organization covering the February-May period to the 54th Council of Ministers of the OAU, Salim said the survival of Africa depends upon her ability to reverse the current trend of degradation of the continent's resources.

The preservation of the environment should be recognized as a key component of development and integrated in our respective national development plans and programmes, Salim told the ministers in Nigeria's new federal capital.

Salim said a sustainable environmental policy should promote growth and development as well as place at the disposal of the people viable options such as alternative sources of energy, better farming methods and the preservation of the balance of the ecosystem.

The OAU secretary general said with the adoption of the Bamako Commitment on Environment and Development in January, Africa has begun on the right course of linking environment with sustainable development.

Salim described the adoption of a second instrument, the Bamako Convention on the Banning of the Import of Hazardous Wastes to Africa and the control of their transboundary movement as a milestone in efforts to stem the pollution of Africa's environment, urging countries which have not yet signed the two conventions to do so.

He also called on African countries to prepare effectively the environmental conference scheduled in Brazil in 1992 in order to adopt a common approach towards linking the preservation of the environment to the elimination of global poverty and to development.

ANGOLA

Lubango Launches Tree Planting Campaign

91P40285A Luanda JORNAL DE ANGOLA
in Portuguese 11 Apr 91 p 2

[Article by Nelson Aleixo]

[Excerpt] Lubango—(From our Correspondent)—A tree planting campaign to ultimately halt the encroaching desert was the highlight of the festivities marking the third anniversary of the Angolan Red Cross in this city. Angolan Red Cross Delegate Jose Sumbo reported that

the campaign, already in its third week, will continue until May and has already seen the planting of 250 trees in various neighborhoods of Lubango city.

The tree plantings were carried out by Red Cross members and a large, and hopefully increasing, number of the local populace who were informed, through lectures and invitations, about the need to halt the desert's encroachment. Desertification has been exacerbated by the drought devastating central and southern Angola for over four years.

Jose Sumbo explained that Lubango was an experimental site for the National Campaign Against Desertification, and that it could be expanded to other provinces in the country following Red Cross publicity work in the form of pamphlets and lectures. [passage omitted]

KENYA

Toxic Dumping To Incur Legal Action

91W'N0458A Nairobi DAILY NATION in English
23 Apr 91 p 3

[Article by James Owuor]

[Text] Legal action will be taken against chemical industries that dump toxic wastes along the beach and in rivers in the Lake Victoria region, the Siaya DC, Mr. Peter Kiilu, said at the weekend.

Mr. Kiilu said the beaches along the lake's shores and the rivers flowing into the lake, were being polluted by careless dumping of toxic waste.

The DC, who is the chairman of the Siaya District Environmental Committee, said the dumping of waste in the area was a serious offence as it polluted the environment and threatened marine life.

The committee, Mr. Kiilu said, would take legal action against chemical manufacturing firms that carelessly dump toxic waste into rivers.

Mr. Kiilu was chairing a district environmental committee meeting attended by all members including the Siaya district environmental officer, Mr. Afewe Onyuna.

However, Mr. Kiilu, who is the Siaya DDC chairman, expressed worry and deep concern over the excessive pollution along the beach. He said the pollution was a health hazard to the community.

The DC instructed that the appropriate authorities take action on the matter immediately in order to curb chemical pollution in the district.

"Our marine life and environmental set-up are in great danger of being killed unless the dumping of the wastes was stopped to protect the environment."

However, Mr. Kulu said that the committee, through the Siaya town council, would be forced to withdraw licenses from the owners of private slaughter houses who had defied council orders to maintain adequate sanitation standards in their areas of operation.

The committee, Mr. Kulu said, would also be forced to close down the slaughter houses.

SOUTH AFRICA

Government Establishes Committee on Greenhouse Effect

MB0406191891 Johannesburg SABC TV 1 Network in Afrikaans 1545 GMT 4 Jun 91

[Text] Increasing concern about the greenhouse effect has led to the South African Government taking the first step to formulate a national policy on the issue. Steps taken by the United Nations in this regard will also be monitored. Karen van Essen has the details:

[Begin recording] [Reporter Karen van Essen] South Africa is largely semi-arid and is extremely sensitive to climatic changes in the southern atmosphere and the oceans. Scientists say that the greenhouse effect could change rainfall patterns and that this will have a serious impact on agriculture.

While there is still no conclusive proof that the world's climate is changing, the concentrations of carbon dioxide and other greenhouse gases in the atmosphere is increasing steadily.

The Department of Environmental Affairs has established a committee to study this phenomenon.

[Environmental Affairs Minister Louis Pienaar] At this point the government still has to develop policies on the situation, but before one can actually do this you have to be convinced that the research carried out in this regard is based on fact. There has to be a definite pattern. There is still a lot of doubt among researchers on precisely what the circumstances are, and we must get the facts on this matter. [end recording]

Institute Head on Country's Water Purification Methods

91WN0483A Johannesburg ENGINEERING NEWS in English 26 Apr 91 pp 23, 39, 41, 43

[Interview with executive director of the Water Research Commission, Piet Odendaal, by Elena Kyriacou. Words in boldface as published. First paragraph is introduction.]

[Text] Through population and development pressures, the quality of South Africa's raw water supplies are gradually deteriorating, and eventually South Africa will have to face the choice of either spending more money on protecting raw water resources, or spending it on upgrading water purification practice. This is the

opinion of the president of the Water Institute of South Africa (WISA) Piet Odendaal in an interview with THE ENGINEERING NEWS.

The proposed extension to the new Northern Sewage Purification Works in Johannesburg is to use a biological rather than chemical process for purifying sewage. Could you comment on the merits of this method of treatment and state how it improves on chemical process?

Actually, the chemical treatment of sewage as a stand-alone process is very rare, and to the best of my knowledge not practised in South Africa at all.

Biological treatment is the standard route, and in some cases it will be supplemented by chemical treatment if phosphates have to be removed to very low levels.

The proposed extension to the Northern Sewage Works will incorporate a biological nutrient removal process—a modification of the activated sludge process—which was pioneered and researched in South Africa, and is now also widely applied overseas.

Biological treatment has significant cost advantages over chemical treatment.

There are a variety of processes used to treat sewage and effluent ranging from the simple irrigation process to the advanced methods of removing nitrogen phosphates. Could you please outline the present technological trends and state whether South Africa is keeping abreast of the rest of the world.

In terms of the South African Water Act, promulgated in 1956, all effluents must be treated to meet prescribed quality standards and then returned to the stream of origin.

The result was that at a stage when raw sewage was still being discharged to many rivers in Europe, Japan and the United States, South Africa already required treatment of all point discharges to streams.

A further result was that research on sewage treatment processes has been proceeding for more than 30 years in South Africa, which kept us well abreast of the state of the art.

In fact, as already stated, biological nutrient removal which has become such a valuable tool in combating eutrophication was discovered at the Council for Scientific and Industrial Research (CSIR) in the early 1960s, and although it has subsequently been researched and applied overseas we are still in a leading position.

There is also a need for simpler technologies for sewage treatment and the use of artificial reedbeds or wetlands in receiving increasing attention worldwide.

Insufficient experience is, however, available to formulate proper design criteria, and this is an aspect presently receiving attention in South Africa.

As far as industrial effluent management is concerned, the Water Research Commission (WRC), in particular, has been funding extensive research, and a variety of technologies and strategies have been developed which place us well in the forefront.

There have been incidences of serious water pollution resulting from the release of toxic effluents into water courses, the worst being the South African Pulp and Paper Industry (Sappi) problem at the Ngodwana mill. What are industries required to do by law to ensure cleaner air, environment and rivers, and how many industries are practising the so-called full effluent recycle procedure?

The Water Act and the Air Pollution Act prescribe various measures and conditions aimed at environmental protection.

In particular, local authorities, factories and other possible polluters must meet specified quality standards for effluents and gas emissions.

Factories also have to meet the requirements of municipal bylaws where they discharge effluents to municipal sewers.

Spills through human error or accident are probably unavoidable but backup plans, as part of a company's pollution control strategy, should be in place to deal with such events.

As far as recycling is concerned, most of our major industries like Sasol, Iscor, AECI and Eskom, and many others, are practising intensive recycling of water.

Closed-loop recycling is very difficult to achieve, however, due to the build-up of salts, so that a certain amount of bleed-off must take place.

Even if desalination is included, you still end up with a brine of which must be disposed.

Concentrates or brines can be disposed of in evaporation ponds, or by using it as a slurring medium for ash transport and final immobilisation in the ash dumps.

How many purification plants are there in South Africa, and how many will be required in the new South Africa where there will be an emphasis on urbanisation?

Frankly, I do not know how many waste water purification plants there are in South Africa—there must be hundreds.

I can state that raw sewage is not discharged to any of our rivers, even though a number of plants might be overloaded, and stormwater runoff from informal settlements does pose serious problems.

How many plants will be required in the new South Africa? One should realise that the new South Africa will not increase the population.

There might well be a further shift to urban areas and as far as I know, most local authorities are accounting for this in their strategic planning for wastewater management.

The real headache concerns the informal settlements and rural sanitation.

What new techniques used to treat sewage and effluent are being developed in South Africa, and where and when are these likely to be applied?

Biological treatment of organically polluted effluents is so well established and has served us so well, that it is doubtful that new technologies will have significant impact in sewage treatment over the next decade.

Biological treatment include biofilters, activated sludge—including modifications for nutrient removal, oxidation ponds, artificial wetlands, anaerobic treatment and biodiscs.

Nevertheless, research is ongoing in South Africa to refine and improve some of these technologies.

The technology holding the greatest potential for innovation, is membrane treatment, ranging from desalination, through ultrafiltration, to microfiltration.

This technology is, in fact, already being applied in certain industrial situations.

The WRC is heavily supporting research in this field.

Could you update us in the attempt by the CSIR to recover sulphur from sewage and effluent as well as giving an insight into the application of the membrane technique or the diverse treatment system such as anaerobic treatment?

The CSIR has done very useful laboratory and pilot scale work on the treatment of sulphate-rich waters, largely derived from mining activities.

Two approaches have been followed.

The first is an anaerobic process whereby the sulphate ions are reduced to hydrogen sulphide which is subsequently converted to sulphur—biologically or chemically.

The second process involves barium sulphide which is used to precipitate sulphates as barium sulphide, and recover of sulphur.

A related process starting off with barium carbonate, has been developed by the University of Natal's Pollution Research Group with WRC support.

Further development work is necessary on all these processes before full scale implementation.

The use of ultrafiltration membranes to concentrate the biomass in anaerobic reactors, has been demonstrated by the CSIR and Membratex—the only South African manufacturer of reverse osmosis and ultrafiltration membranes.

Thereby the performance of reactors is greatly improved and the process is already finding industrial application.

The University of Natal, again with WRC support and in collaboration with Durban Corporation, is looking at the application of crossflow- microfiltration, using woven tubular membranes, to upgrade the performance of sewage works anaerobic digesters.

This work is still in an early stage, but could have tremendous impact if successful.

Walt Disney World along with the City of Brazilia use South African developed techniques of removing nutrients from sludge. To what extent is South Africa using these systems itself for the removal of nitrogen and phosphates?

Biological nutrient removal is indeed widely applied in South Africa and in the order of 50 plants are incorporating the technology.

In view of the 1 mg/l phosphate standard being imposed by the Department of Water Affairs in sensitive catchments, all new plants constructed in these catchments are designed for biological nutrient removal.

When we published our feature last year, South African effluents were in the throes of being revised by the Department of Water Affairs to rationalise the requirements. What is the outcome of this revision and what impact are the new regulations likely to have in this country?

The Department views water pollution control as one aspect of water quality management.

In controlling pollution, the Department has now moved away from the application of a uniform effluent standard to a receiving water quality objective approach for conventional pollutants, and to a pollution preventive approach for hazardous pollutants.

The overall aim of this approach is to keep our water resources fit for the five recognised users of water, that is, domestic, industrial, agricultural, recreational and environmental.

A waste load allocation is central to this approach.

This entails setting standards and allocating the available assimilative capacity of the water source to the various effluent producers.

The Department also recognised that some form of precautionary approach is required.

It is, therefore, using the existing general standard as a minimum standard, and will only concede to a waste load allocation investigation in cases where it is satisfied that the effluent producer cannot comply with this minimum standard.

In some cases it may initiate such investigations if this minimum standard does not ensure the required quality for the receiving water.

How much is spent in South Africa each year on sewage and effluent control, and what sort of financial pressure is being exerted to stimulate new techniques and maximise the impact of money spent on environmental clean-up?

Estimates by Dr. James Barnard, our previous president, based on capital cost of R1-million per Ml of wastewater to be treated, indicate that the present value of capital investment for municipal wastewater treatment in South Africa is of the order of R4,8-billion.

Running costs still have to be added.

Effluent discharges have to meet standards and have to use technology.

Cost-benefit considerations will obviously constitute the driving force behind the implementation of new technology.

The WRC is investing heavily in the development and improvement of wastewater treatment technology, and is well aware that research should focus on strategies and technologies to achieve water quality objectives more effectively and/or more economically.

The salinity level of barrage on the Vaal has caused concern, particularly during the periods of drought. What is being done to reduce the salt content of urban drinking water, and how will the importation of water from the Lesotho Highlands Water Project lower the salination level?

A number of years ago, the WRC charged the University of the Witwatersrand to develop a suite of mathematical models, describing the movement of salts through the Vaal barrage.

The Department of Water Affairs has since then, with the assistance of Stewart Sviridov and Oliver, used the models to test various management scenarios for maintaining acceptable salt levels (maximum 300 mg/l) in water supplied in the PWV area.

The most attractive management option which emerged was a blending approach whereby increased quantities of fresh water would be released from the Vaal dam when required.

The transfer of Lesotho Highlands water in about 1996, that is, water with a very low salt content, will greatly facilitate the achievement of target salt levels to well beyond the turn of the century.

Could you describe the latest legislation relating to solid waste dumps and how these regulations will impact industry and local government?

There is no separate legislation relating specifically to solid waste management.

Legal control is at present vested in the Water Act.

In terms of the Act, permits are issued for land-fill waste disposal.

Different classes of sites are defined, based on their potential for groundwater pollution, for example, a class 2 site can only receive domestic refuse, while industrial and hazardous wastes can only be disposed of on a class 1 site.

Aspects to be considered in the granting of permits, include the permeability of the soil and the lining material (such as plastic or compacted clay).

Following a comprehensive survey of solid and hazardous waste management in South Africa, conducted by the Foundation for Research Development (FRD) on behalf of the Department of Environment Affairs, recommendations for improved legislation are in the process of being formulated.

What sanitation plans are envisaged for unorthodox residential areas like squatter camps?

This is a very difficult problem indeed.

Due to the very nature of squatter camps, permanent waterborne sewerage systems can hardly be considered.

There is also no central planning and funding agency to deal with the problem.

Responsibilities are scattered over a large number of local and other authorities and each try to deal with the problems as best it can, depending mainly on pit latrine systems.

A workshop is being planned for August this year, through the agency of the Development Bank, to draw together representatives from the main interested bodies, to focus attention on sanitation and water supply in informal settlements and in rural developing areas.

Hopefully some co-ordinated efforts will emerge from this event.

The quality of South African drinking water has been questioned by water engineers who charge that this country does not have the advanced public health awareness of Switzerland, Germany and Holland. What advances could and should be made in water purification to achieve drinking water excellence?

I do think that most of the misgivings expressed in newspaper reports some months ago are not quite congruent with the facts or economic realities.

Apart from occasional incidents of off-tastes and flavours, which occur worldwide, South African drinking waters on the whole have an excellent reputation.

It is certainly possible to upgrade the quality of any drinking water through the introduction of sophisticated and expensive technology such as activated carbon, as is the case in the European countries you mention.

But are we not then moving on a curve of diminishing returns?

South Africa is developing country and priorities in the spending of public funds must be carefully considered.

Money spent on the perhaps unnecessary upgrading of drinking water quality could be spent to supply water where there is no water at all.

At the same time we have to be aware that through population and development pressures, the quality of our raw water supplies are gradually deteriorating, and eventually we will have to face the choice of either spending more money on protecting our raw water resources, or spending it on upgrading water purification practice.

It has been said that fresh water supplies for Cape Town's metropolitan area will be committed by the year 2007 and thereafter sewage effluent will have to be purified and retained. In what other areas of South Africa will such actions also be needed?

Once the fresh water supplies for the Cape Town metropolitan area are fully committed, the reclamation of sewage effluent is not the only option for supplementing supplies.

An obvious other alternative is the desalination of sea-water.

As far as other areas are concerned, the fact is that the extensive re-use of treated sewage effluents has been ongoing for many years through planned indirect re-use.

The most prominent case in point is the water supplied from the Vaal River which receives large quantities of return flows.

Direct re-use for irrigation, cooling and industrial process water is also widely practised and will, undoubtedly, increase in future.

Whereas inland centres will probably continue to practise large-scale indirect reuse, coastal centres have limited options for indirect reuse because they are "at the end of the line."

Therefore, without trying to set any dates, it seems logical that coastal cities will have to lead the way as far as large-scale direct re-use is concerned.

This need not necessarily be for potable use, as dual distribution systems will probably merit serious attention as pressures for direct re-use increase.

To what extent is South Africa co-operating with sub-Saharan Africa in the field of water, sewage and effluent?

The Department of Water Affairs serves on a number of joint permanent technical and permanent water commissions with neighbouring states in order to negotiate and administer agreements for ruling the management and distribution of common water resources.

I also know that South African consultants in the water field are operating in various African countries.

Although WISA has a number of members in neighbouring countries, we feel that there is a real need to establish closer ties.

We have, therefore, taken initiative in this direction by inviting a number of representatives from southern African countries, as far afield as Mauritius and Madagascar to attend our biennial conference to be held at the World Trade Centre from 13 to 16 May this year.

Traditionally in coastal areas, sewage is being disposed of by piping it into the sea, a practice which is causing increasing concern. Should coastal local authorities not be made to purify water in the same way as inland authorities are obliged?

This is obviously a very emotional issue and should be approached in full cognisance of the facts and problems surrounding it.

Although a lot of sewage is indeed discharged to sea along our coast, it is equally true that large quantities of sewage are biologically treated—similar to inland authorities—before discharge.

Coastal authorities do, however, suffer the disadvantage that suitable land area is often just not available for the construction of full treatment facilities, without incurring prohibitive pumping costs.

In such instances sea disposal offers an attractive alternative.

It will obviously depend on the ratepayers if they are prepared to absorb the more costly alternatives.

It should also be noted that before any local authority or industry can discharge to sea, it must obtain a permit from the Department of Water Affairs.

Permits will only be granted if prior studies indicate that the dilution and dispersal characteristics at the proposed site of discharge are acceptable, taking into account the quality and quantity of the discharge stream.

Permits must also be regularly reviewed, and incorporate prescribed monitoring programmes.

What could be held up as a model for local authorities and industries as far as the control of purification and recycling of sewage and effluent is concerned?

A model organisation as far as water and waste management is concerned, is one that has a declared environmental management policy, with a top management that is committed to the implementation of such policy and makes the necessary manpower and resources available for this purpose.

What role is your institute playing in water quality control? In what way do you liaise with your world counterparts?

Through publications, conference, seminars and regional meetings, WISA not only promotes the dissemination

and enrichment of information relating to water quality control, but also creates opportunities for interaction between role players in this field.

We have also established a number of technical divisions, each focusing on a specific area of activity, which are proving to be very effective instruments for mobilising expertise and stimulating creative thinking, inter alia in the field of water quality control.

Examples of such technical divisions are the ones on sludge management and on nutrient removal.

WISA's liaison with its international counterparts is very healthy indeed.

This is illustrated by the fact that the following top officers from the most prominent international associations in the field have accepted our invitations to attend our biennial conference in May: the president of the International Water Supply Association (IWSA); the vice-president of the European Water Pollution Control Association (EWPCA); the president of the Institute for Water and Environmental Management (IWEM) in the UK; and the president of the Water Pollution Control Federation (WPCF) in the United States.

Traditionally our president is invited to attend the annual IWEM conference in the UK. WISA is a member association of the WPCF in the United States, with a director on the federation's Board of Control; the South African National Committee for the IAWPRC falls under governing board; we maintain publications exchange arrangements with a number of overseas national associations; and many of our members hold membership in one or more of the international associations I mentioned.

Are regulations laid down by the United Nations, or recommendations made by the 52 country international associations of water pollution research and control, as to how countries should go about maintaining high water purification standards?

I know that the EEC has certain regulations relating to water pollution control and water quality standards to which member countries have to comply, in order to achieve uniformity in the community.

The United Nations has no such regulations, but the World Health Organisation, in 1984, published guidelines for drinking water quality.

These contain no absolute criteria but simply provide guidelines which countries can adopt voluntarily, based on affordability and level of development.

The 52 countries that you have referred to are the member countries of the IAWPRC which I already mentioned.

The objectives of this association are basically to create an international forum for communication and information exchange in the field of water pollution control, and to promote education and research in this field.

So far it has not formulated any recommendations as to policies and procedures that countries should follow in the management of water quality.

Are there any other issues you would like to raise?

Yes, I would like to expand on the comment I made about model organisations.

With all the problems we are facing in the coming years, it is conceivable that sufficient funds may not be forthcoming to adequately maintain the role of government and other authorities in monitoring and correcting environmental abuse, including water, air and land pollution.

The consequences could be disastrous.

We should plan for such an eventuality, and I believe that the answer is to be found in mobilising the sense of responsibility that is inherent in most leaders and, therefore, in most organisations.

If the managements of key organisations, local authorities, associations and other organisations could be induced publicly to announce corporate environmental policies, and underpin this with overt action, it is just possible that a ripple effect be set in motion which could penetrate all levels of society.

We should strive to achieve environmental management strategies which strongly involve grassroots initiatives, and move away from an over-dependence on authoritative control.

National Environmental Situation Reviewed

HK0506091391 Beijing CHINA DAILY in English
5 Jun 91 p 5

[By Zhou Jie]

[Text] Editor's note:

Today is World Environment Day. China Daily's Science page presents a focus on the environmental situation in both China and other parts of the World. [end editor's note]

How clean was China in 1990? An environmental report discloses both comforting and worrisome news on last year's national environmental situation.

Industrial waste water discharge was under control, fewer trees were lumbered, more land was protected from soil erosion and more nature reserves were set up.

There was also a small but significant decrease in solid industrial waste, according to the State Environment Protection Bureau's annual environmental report issued yesterday.

The State invested 7 billion yuan (\$1.32 billion) in countering industrial pollution: 74 percent of dust and fumes caused by burning fuel were prevented from entering the atmosphere; one third of industrial waste water was cleaned before being released; and 370 million tons of industrial solid wastes were treated and nearly half of these were utilized.

Last year, 17 nuclear waste stores were set up across the country and 12 have been put into operation. Five more ocean nature reserves were set up, making a national total of 61.

Meanwhile, more than 5.5 million hectares of plain or mountainous areas were planted with trees, and as a result, man-made forests now cover 306.7 million hectares.

Also more than 5.3 million hectares of barren or semi-barren land were turned into pasture, and more than 23 million hectares of flooded land and saline-alkali or red and sandy soil were transformed into arable land.

Last year, the State also issued a number of regulations to further restrict industry from polluting the environment, with major new enterprises having to make due reports on their measures to reduce industrial waste.

However, the 1990 report listed more bad than good news on the environmental situation.

Atmosphere

China's large cities still suffer from heavy air pollution and the atmosphere of small cities was reported as worsening.

Reducing and curbing industrial pollution largely depends on the transformation of the whole industrial

and manufacturing process and the introduction of modern technology. But this takes time and huge expenditure, says an official from the State Environmental Protection Bureau.

More domestic sewage was drained into local rivers, contaminating tap water supplies. Vehicles, factories, crowds in the streets, their television sets and hi-fi's caused more noise pollution than in previous years.

Last year, large factory chimneys churned out some 8,500 billion cubic metres of waste gases, a 2.8 percent increase on 1989. Some 15 million tons of sulphur dioxide and 21 million tons of industrial dust were spewed into the sky, a slight decrease on the previous year.

Northern cities were more polluted than those in the south, with an average in the north of 475 microgrammes of suspended particles per cubic metre, 44 percent up on their southern counterparts. The nation's average was 387 microgrammes per cubic metre.

Shijiazhuang, Nanchang, Jilin, Urumqi, Luoyang, and Tangshan were among the most dusty cities, while Chongqing, Guiyang, Yibin, Shijiazhuang, Qingdao, Nanchang and Urumqi suffered seriously from sulphur dioxide pollution.

Although acid rain had not spread across the country, it had expanded in South and Southwest China.

Water

Some 35.4 billion tons of waste water were drained into rivers and the sea, two thirds being industrial waste water and the rest domestic sewage. Industrial waste water was 1.4 percent down and domestic sewage 4 percent up on 1989.

Water quality in the Yangtze River and the southern Zhujiang River system was generally good. However, water quality in the Huihe River system in Anhui and Jiangsu provinces and Liaohe River system in Northeast China continued to worsen. According to the report, of 94 rivers passing through cities, 65 were polluted.

The underground water situation in most major cities remained good though most cities suffered partial pollution. Land subsidence caused by over-exploiting underground water posed an increasingly serious problem. Of the 54 cities monitored, 36 faced problems including Shanghai, Tianjin, Suzhou and Changzhou.

Most sea areas were clean, though some coastal, gulf and estuary waters were contaminated. Pollution in Jiaozhou Gulf, Hangzhou Gulf and Zhoushan Archipelago area had eased, while the west Bohai Gulf and Zhujiang River mouth area situations were worsening.

Last year, red tides (all-destructive pollution), struck coasts more often, and affected areas increased. Altogether 34 red tides were reported, 22 more than in 1989.

The East Sea was hit by 18 red tides last year, sweeping over 20,000 square kilometres.

Noise and Accidents

Noise pollution increased in cities last year, surpassing national standards. Traffic noise made up one third of city noise pollution, people's daily activities, 40 percent and industrial noise, 27 percent. Compared with 1989, daily activities contributed more noise than vehicles, becoming the major pollution criminal.

The report also announced 3,462 pollution accidents across the country, 4 percent up on 1989. No information on the losses caused by the accidents was given.

1990 was a good year for forestry with more trees being grown than lumbered in more than half the provinces and autonomous regions. But experts said timber shortage was still a serious problem for China.

One sixth of China's land mass, 150 million hectares, suffered from soil erosion, the middle reaches of the Yellow River and upper reaches of the Changjiang River suffering most severely.

The shrinking tendency of arable land slowed down but the soil became less fertile. Eighty percent of arable land was classified as medium- and low-yield, compared with 66 percent in 1989.

The environmental situation also endangered China's plants and wildlife. As their natural habitats have been squeezed, the populations of camels, Asian elephants, snub-nosed monkeys, pandas, tigers and many other rare species have declined.

Regulations for Preventing Air Pollution Promulgated

OW2705203191 Beijing XINHUA Domestic Service
in Chinese 2004 GMT 26 May 91

[Text] Beijing, 27 May (XINHUA)—The "Detailed Rules for Implementing the PRC Law on Preventing Atmospheric Pollution," which the State Environmental Protection Bureau has promulgated with the State Council's approval, will become effective on 1 July.

According to the rules, all local people's governments shall be responsible for the quality of the atmosphere in areas under their jurisdiction, and they shall take measures for preventing atmospheric pollution, and protecting and improving the atmospheric environment. In accordance with the requirements set by people's governments for environmental protection at various levels, departments in charge of economic construction of the same levels shall incorporate their work of preventing pollution with their production and construction plans. Enterprises which release pollutants into the atmosphere shall incorporate prevention of atmospheric pollution

into their production and construction plans and technical renovation plans. Authorities in charge of enterprises shall intensify their supervision over enterprises' prevention of atmospheric pollution.

The rules also specifically prescribe measures relevant to the monitoring of atmospheric pollution and prevention of pollution caused by smoke, waste gas, powder, dust, and odorous smell. They also specify the legal responsibilities to be borne by those who cause atmospheric pollution in violation of the: "PRC Law on Preventing Atmospheric Pollution."

Rules for Implementation of Pollution Law

OW0206074491 Beijing XINHUA Domestic Service
in Chinese 2011 GMT 26 May 91

["Detailed Rules for Implementation of the PRC Law on Prevention and Control of Atmospheric Pollution"—XINHUA headline]

[Text] Beijing, 27 May (XINHUA)—

Chapter I. General Principles

Article 1. These detailed rules are formulated in accordance with the provision in Article 40 of the: "PRC Law on Prevention and Control of Atmospheric Pollution."

Article 2. Local people's governments at all levels should be responsible for the quality of the atmospheric environment in the areas under their jurisdiction, take measures to prevent and control atmospheric pollution, and protect and improve the atmospheric environment.

Article 3. Economic construction departments of local people's governments at all levels should follow the requirements for atmospheric environment protection laid down by the people's government at the corresponding level, incorporate the work of preventing and controlling atmospheric pollution into their departments' production and construction plans, and organize the efforts to implement the plans.

Article 4. Enterprises that emit pollutants into the atmosphere should incorporate the work of preventing and controlling atmospheric pollution into their production, construction, and technical transformation plans. Departments in charge of enterprises should exercise more effective supervision and management over enterprises in connection with preventing and controlling atmospheric pollution.

Article 5. Funds, materials, and equipment needed for preventing and controlling atmospheric pollution in a construction project should be planned as a whole together with the main structures.

Chapter II. Supervising and Managing the Work of Preventing and Controlling Atmospheric Pollution

Article 6. Before going into production or being put to use, a construction project that emits pollutants into the

atmosphere should have its atmospheric pollution prevention and control facilities inspected by the environment protection department that examines and approves the report on that project's environmental effects. The project should meet the following requirements:

1. The atmospheric pollution prevention and control facilities have reached the designed standards for disposal of pollutants;
2. The rules and regulations for managing the atmospheric pollution prevention and control facilities are adequate;
3. The related technical documents for the atmospheric pollution prevention and control facilities are complete.

The construction project can go into production or be put to use only after its atmospheric pollution prevention and control facilities have met the requirements and passed the acceptance tests.

Article 7. Units that emit pollutants into the atmosphere should more effectively manage, regularly inspect, keep in good repair, or upgrade the atmospheric pollution prevention and control facilities that have been put to use after passing acceptance tests in order to ensure normal operation of the facilities.

Article 8. Units that emit pollutants into the atmosphere should, as stipulated, file a "Pollutant Emission Report and Registration Form" to the environmental protection department in the locality where the pollutant is emitted. In case major changes should be made in the category, quantity, and density of the pollutant after the report and registration form has been filed, a new "Pollutant Emission Report and Registration Form" should be filed 15 days before the changes are to be made. In case of abrupt major changes, the new "Pollutant Emission Report and Registration Form" should be filed within three days after the changes occur.

Article 9. When it becomes necessary to dismantle or idle the facilities for disposing of atmospheric pollutants, a report explaining the reasons should be filed in advance to the local environmental protection department. The environment protection department should give a reply within a month after receiving such a report. No reply within a month is regarded as a consent.

Article 10. Pollutant emitting units ordered to control pollution within a set time limit should regularly report to the environmental protection department on the progress of pollution control.

The environment protection department should inspect the progress of pollution control made by the units ordered to control pollution within a set time limit. It should conduct acceptance tests on the projects that have finished with pollution control within a set time limit, and report to the people's government at the corresponding level on the results of the acceptance tests.

Article 11. A unit that causes an atmospheric pollution incident must inform the local environmental protection department within 48 hours of the incident and submit an initial report on the time, location, type and quantity of pollutant materials, economic losses, personnel injuries, and so forth. After completing an investigation of the incident, the unit shall submit a detailed written report, together with relevant papers, on the cause and development of the incident, the damage, the measures that have been taken to deal with the aftermath and the results, problems left over from the incident, and preventive measures taken.

Article 12. Supervisory or administrative personnel of the environmental protection department and other supervisory or administrative department shall produce inspection papers and wear name tags while making an on-the-spot inspection of a pollutant-discharging unit in their jurisdiction.

Inspection papers for supervisory or administrative personnel of the environmental protection department are to be signed and issued by environmental protection departments of the people's governments at and above the provincial, municipal, and autonomous regional levels.

Article 13. When an environmental protection department or other supervisory or administrative department makes an on-the-spot inspection, it may ask the unit being inspected to provide the following information:

1. Information on the discharge of pollutants;
2. Operation, utilization, and management of the pollutant treatment facilities;
3. The models and specifications of the monitoring instruments and facilities and their inspection records;
4. The monitoring analysis methods used and the monitoring records;
5. Implementation of the order issued to the unit requiring it to improve its pollution treatment within a prescribed period;
6. The circumstances of an incident and other relevant records;
7. Production techniques and raw materials used by the unit and other relevant information; and
8. Other circumstances and information relevant to the prevention of atmospheric pollution.

Chapter III. The Prevention of Soot Pollution

Article 14. The competent department of the State Council that sets the quality standards for boiler products shall, in accordance with the state-set standards for boiler soot discharge, specify the standards for the density of the soot and the darkness of the exhaust of the initial discharge of boilers.

Before a new boiler product is finalized, standards for the density of the soot and the darkness of the exhaust of the initial discharge of boilers and other data obtained through experiments shall be submitted to the environmental protection departments of the people's governments at and above the provincial, municipal, and autonomous regional levels for the record.

The boiler manufacturer shall clearly state the soot density and exhaust darkness standards of the boiler's initial discharge on the name plate and manual.

The manufacturing, selling, or importing of boilers that fail to meet the standards for the soot density and exhaust darkness as referred to in the first paragraph of this article will not be allowed.

Article 15. Before they are put into production or put into use, newly built industrial furnaces and newly installed boilers must be reported to and inspected by the environmental protection department in accordance the stipulated procedure; those that fail to meet state or local atmospheric pollutant discharge standards will not be allowed to be put into production or use.

Article 16. Both heat and electricity supply systems shall be established in newly developed urban industrial zones, newly developed residential areas, or when a whole section of an existing urban center is transformed. In areas where conditions are not ripe for introducing both heat and electricity supply systems, a centralized heating supply system shall be used. Facilities for both heat and electricity supply systems or for a centralized heating supply system shall be designed, built, and put to use simultaneously with the construction projects.

Article 17. Relevant departments of the State Council and local people's governments at all levels should adopt measures to promote shaped coal and low-pollution combustion techniques, and to gradually restrict the burning of powdered coal. Fuel-supply departments should accord priority to the supply of low-pollution coal to the general public.

Chapter IV. Prevention and Control of Pollution From Waste Gases, Dust, and Offensive Odors

Article 18. New projects that release poisonous waste gases and dust are prohibited from being constructed in residential districts. Projects that are already in operation or which exceed the discharge standards should be purified. Within their administrative power, people's governments should order enterprises and institutions causing serious pollution to remedy the situation within a specific period.

Article 19. Coke-oven gas and blast-furnace gas produced during industrial production, and colliery gas, synthetic ammonia and other combustible gases which are discharged regularly should be recovered for use. As for those enterprises which have the facilities to recover waste gases but do not do so, environmental protection departments of people's governments at county levels

and above should report them to the respective people's governments having jurisdiction over them, and upon receiving approval order them to recover the waste gases within a specific period.

Article 20. Enterprises which are required to burn asphalt, felt, rubber, plastics, leather and other materials that generate poisonous dust and gases and offensive odors within densely populated areas because of special reasons must obtain the approval of environmental protection departments in their localities, and set up facilities to burn them simultaneously.

The regular melting facilities used for melting asphalt in cities and towns should be airtight.

Article 21. Prevention measures such as tightly covering up materials or sprinkling must be taken according to the relevant provisions in the transportation, loading, and unloading, and storage of materials which may emit poisonous and harmful gas or send forth dust.

Article 22. Pollutants discharged by motorized vehicles and vessels into the atmosphere will not exceed the prescribed standard. Appropriate control measures will be taken against those whose discharged pollutants exceed the established standard.

Article 23. Control over exhaust pollutants discharged by motor vehicles and vessels shall come under the unified supervision of the environmental protection departments of the people's governments at all levels.

Control over exhaust pollutants discharged by motor vehicles and vessels shall also be supervised by various public security, transport, railway, fishery, and other management departments in accordance with their respective duties.

Article 24. Departments in charge of the maintenance of motorized vehicles and vessels shall make the control of exhaust pollutants a part of quality control.

Manufacture, sale, and importation of vehicles discharging exhaust pollutants that exceed the state's prescribed standard shall not be permitted.

Chapter V. Legal Liability

Article 25. If fines are to be imposed in accordance with Article 31 of the Law of the People's Republic of China on the Prevention and Control of Atmospheric Pollution, they shall be done on the basis of the provisions listed below:

1. Those that fail to report or report falsely on pollutant discharge provided for by the environmental protection departments under the State Council shall be fined a sum of money between 300 and 3,000 yuan;
2. Those that arbitrarily dismantle or idle pollutant prevention and control facilities without the approval of an environmental protection agency, thus resulting in

the discharge of pollutants exceeding the prescribed standard, shall be fined a sum of money between 500 and 30,000 yuan;

3. Those that reject on-the-spot inspection by an environmental protection agency or other supervisory and managerial departments, or try to resort to deceptive means during inspection shall be fined between 300 and 3,000 yuan;

4. Those that burn asphalt, asphalt felt, rubber, plastics, leather, and other materials producing poisonous, harmful smoke and dust or pernicious gas in densely populated areas without authorization shall be fined between 300 and 3,000 yuan;

5. Those that fail to pay, according to state regulations, a charge for exceeding the pollutant discharge standard shall be fined between 1,000 and 10,000 yuan;

Article 26. The following provisions shall be implemented if fines are to be imposed in accordance with Article 32 of the Law of the People's Republic of China on the Prevention and Control of Atmospheric Pollution:

1. If a construction project is put into production or operation without an atmospheric pollution prevention and control facility, the environmental protection agency that examines and approves the report on the project's impact on the environment shall order it to cease production or operation and may impose a fine ranging from 5,000 to 50,000 yuan.

2. If a construction project is put into production or operation in spite of the fact that its atmospheric pollution prevention and control facility fails to meet the relevant state requirements that construction projects must meet on the regulations on environmental protection and control, the environmental protection agency that examines and approves the report on the project's impact on the environment shall order the cessation of its production or operation, and may impose a fine ranging from 2,000 to 20,000 yuan;

Article 27. A fine between 10,000 and 100,000 yuan may be imposed on an enterprise or an institution if they fail to control their pollution after they have been ordered to do so within a fixed period of time in accordance with Article 33 of the Law of the People's Republic of China on the Prevention and Control of Atmospheric Pollution.

Article 28. The following provisions shall be implemented if fines are to be imposed in accordance with Article 34 of the Law of the People's Republic of China on the Prevention and Control of Atmospheric Pollution:

1. Enterprises or institutions causing atmospheric pollution shall be fined a sum of money between 10,000 and 50,000 yuan.

2. Enterprises or institutions causing major economic losses shall be fined a sum equivalent to 30 percent of the financial loss, but the maximum fine shall not exceed 200,000 yuan.

Article 29. The environmental protection departments of people's governments at the county level are authorized to impose a fine below 10,000 yuan. Where a fine exceeds 10,000 yuan, approval must be obtained from the environmental protection department of a people's government at a higher level.

The environmental protection departments of city people's governments directly under the provincial government are authorized to impose a fine of less than 50,000 yuan. When the fine exceeds 50,000 yuan, approval must be obtained from the environmental protection department of a people's government at a provincial level.

The environmental protection departments of the people's governments of provinces, autonomous regions, and municipalities directly under the central government are authorized to impose a fine of less than 200,000 yuan.

Fines are to be delivered to the state treasury. No units or individuals are authorized to retain the fines.

Article 30. Units and individuals that have paid a charge for exceeding the pollution discharge standard or that have been warned or fined are still obliged to eliminate harmful pollution, and are still liable to pay compensation for losses.

Chapter VI. Supplementary Articles

Article 31. Relevant departments under the State Council and the provincial, autonomous regional, and municipal people's government may formulate measures for implementing these detailed rules in accordance with the Law of the People's Republic of China on the Prevention and Control of Atmospheric Pollution.

Article 32. The Environmental Protection Department of the State Council shall be responsible for explaining these detailed rules.

Article 33. These detailed rules shall go into effect on 1 July 1991.

Environmental Protection Measures Stepped Up

HK0706041791 Beijing CHINA DAILY in English
6 Jun 91 p 3

[By staff reporter Zhou Baoxia]

[Text] In a renewed effort to promote public awareness of the country's pressing need for a better environment, the government has decided to publish an annual report on its battle against pollution.

This, according to Wang Yangzu, deputy director of the National Agency of Environmental Protection, is aimed

at involving officials and individuals in a nationwide environmental protection drive.

Starting this year, the agency will release the country's environmental data every May. The report will reveal strategies implemented to prevent and treat pollution, as well as the general environmental situation across the country.

About 13 State departments which oversee environment, agriculture, forestry, water conservancy, urban and rural construction, land use, and energy and chemical industries are expected to play their part in the compiling of the report.

Wang, on behalf of the National Agency of Environmental Protection of China, released the 1990 report on the eve of yesterday's World Environment Day.

The theme for the year, set by the United Nations Environment Programme, was "the climate is changing—that requires global cooperation."

Apart from releasing the 1990 report in an effort to make the public aware of the severe environmental situation in the country, various publicity and consulting services were carried out in each of Beijing's urban districts and rural counties.

Activities in Beihai Park, organized by the People's Government of the Western City District, included calligraphy writing, painting, an exhibition of rare animals, Karaoke and bird-taming performances.

A large-scale exhibition of "Earth and Man" opened at the Geological Museum in western Beijing's Xisi area yesterday morning. The World Environment Day activities ended in a fashion show and art performances.

Radiation Expert on Nuclear Power Generation Safety

*OW3005190991 Beijing XINHUA Domestic Service
in Chinese 1222 GMT 29 May 91*

[By reporter Yang Huanqin (2799 3562 0530)]

[Text] Vienna, 28 May (XINHUA)—Li Deping, a renowned Chinese expert in radiation protection and honorary president of the China Radiation Protection Institute, says: "Nuclear power generation is not a dangerous industry but one demanding high technology."

Professor Li Deping is currently attending an international conference for assessing consequences of the Chernobyl accident and a meeting of the UN Science Committee on Atomic Radiative Effects in Vienna. In an interview with XINHUA, he said that China was building its first commercial nuclear power plant when the Soviet Union's Chernobyl Nuclear Power Plant incident took place. This accident has had a great impact on the world and drawn our attention to greater nuclear safety. As a result, we have strengthened safety and

protective measures starting with the central leading bodies down to the various organizations and organs.

He said: The advanced experience of foreign countries has been incorporated into the nuclear power plants currently under construction in our country. From the perspective of modern design concepts for nuclear power plants commonly in use internationally, it can be said that the nuclear power plants currently under construction in China "are up to a fairly high safety standard." He stressed: There has been vast advancement in the requirements of modern nuclear reactors as compared to the previous stages. The so-called in-depth protections are commonly being used in modern reactors. There are a number of protective layers: the innermost layer is a cladding which closely encloses the radioactive element, the middle layer is a completely sealed pressure chamber, while the outermost layer is a thick concrete shell called the safety casing. With these protective layers, no major mishap could develop under normal circumstances. Therefore, it is rather impossible for the whole reactor to collapse should a single electric motor stop operating. Judging from the design criteria for modern reactors, "no malfunctioning of one single piece of equipment or any one operational error could lead to hazardous consequences."

Li Deping said: With a view to ensuring absolute safety of nuclear power plants, the country has taken a series of measures which include improving the work of the Nuclear Safety Administration, establishing an independent quality safeguard system, setting up an authoritative committee of experts, and conducting rigorous training for power plant personnel.

He said: Nuclear power generation is a new technique. In view of its future use, while it is reasonable to set rather strict requirements, we should not demand perfection. Rather, we should approach the question this way: From what we know today, the damage done by mankind's entry into the age of nuclear energy will be far less than the damage done by its entry into the ages of the steam engine and electricity.

Construction of Coastal Forests Proves Beneficial

*OW0306082991 Beijing XINHUA in English
0706 GMT 3 Jun 91*

[Text] Fuzhou, June 3 (XINHUA)—An 18,000 kilometer coastal forest shelter-belt, which extends from the mouth of the Yalu River in northeast China to the Beilun River in south China's Guangxi Zhuang Autonomous Region, has been constructed.

The shelter-belt, which covers 195 coastal cities and counties, is the result of the great afforestation effort in the country's coastal areas over the past 40 years.

Statistics show that by the end of 1990 the country had built over 10,639 kilometers of coastal forest shelter-belts. In addition, shelter-belts were planted around 37

million mu (15 mu to a hectare) of cultivated land and trees were planted on another 100 million mu.

In the past four years alone afforestation efforts have been carried out on over 17 million mu and on over 3,000 kilometers of the country's coastline.

Government officials attribute the success of the afforestation effort to a number of factors including:

- The great attention given to the construction of forest shelter-belts in coastal areas in recent years, along with the rapid economic development.
- The scientific management of afforestation projects. During 1988 and 1989, the Ministry of Forestry granted special loans to afforestation experimental bases in 16 counties and cities in 11 coastal provinces.
- New practices and scientific achievements made it possible to plant trees on saline-alkali land, as well as on land affected by erosion. Statistics show that more than 85 percent of the trees planted during the effort have survived.

Shanghai Reports Success in Controlling Pollution

OW0306170891 Beijing XINHUA in English
1504 GMT 3 Jun 91

[Text] Shanghai, June 3 (XINHUA)—Although the industrial output value of Shanghai, China's biggest industrial city, has doubled in the past five years and the population has increased by one million, the pollutants discharged by the city have been kept below the 1982 level.

The city has invested 1.4 billion yuan in the past five years to implement 4,626 pollution control projects, according to the city's environmental protection bureau.

At present, the city can dispose of 700,000 tons more waste water daily than it could five years ago. Moreover, 59.4 percent of the industrial waste water is disposed of before it flows into the nearby rivers, greatly reducing the content proportions of heavy metals in the water.

Although the city burned 20 percent more coal last year, it released 86 tons less smoke and dust into the air than it did five years ago. This is the result of the city's ability to treat an additional 353 million cubic meters of industrial gas a day.

The environmental bureau says that 81.3 percent of the city's industrial waste is recycled as compared to five years ago when only 71.3 percent was recycled.

The city has addressed 9,277 noise sources in the past five years. Most parts of the city are now low noise districts.

PRC Hosts Environment Meeting of Developing Countries

OW0306101491 Tokyo KYODO in English 0936 GMT
3 Jun 91

[Text] Tokyo, June 3 KYODO—China will host a six-day ministerial meeting of developing countries on the environment and economic development from June 14, Japanese government officials said Monday.

Some 40 developing countries, including India, Egypt, Brazil, and Kenya, will participate in the conference and adopt a declaration calling for economic assistance to developing countries from advanced countries to help prevent global warming, the officials of the Environment Agency said.

The developing countries intend to adopt the declaration in preparation for the UN Conference on the Environment and Development scheduled for June next year in Brazil, the officials said.

China is expected to pressure advanced nations by presenting the declaration at a third preparatory meeting for the UN-sponsored conference in August in Geneva, the officials said.

The declaration will demand that developed nations extend a new additional fund to developing countries for preservation of the environment, the officials said.

Developing countries will imply in the declaration that they do not expect assistance from existing financial institutions like the World Bank but want to establish a new additional fund, the officials said.

They have [words indistinct] trust in the World Bank, over which the United States has a strong influence, and fear that advanced countries may reduce amount of funds to support development and instead reallocate them to preserve the environment, the officials said. The United States is reluctant to provide a new additional fund.

The participants are expected to urge developed nations to transfer technology for environmental preservation on preferential and nonprofit conditions, the officials said.

Developing countries want advanced nations to transfer technologies to prevent global warming and biotechnologies at low cost, the officials said.

The conference is also expected to declare that developed countries which consume a large amount of resources are largely to blame for global warming and that the economic progress of developing countries should not be hindered by measures taken to prevent global warming, they said.

UNDP Providing Environmental Management Assistance

*OW0506104591 Beijing XINHUA in English
0937 GMT 5 Jun 91*

[Text] Beijing, June 5 (XINHUA)—The United Nations Development Program (UNDP) has commenced several activities to stem environmental degradation, in partnership with the Government of China, a UN official said here today.

Roy D. Morey, resident coordinator of the UN system of operational activities in China, said in a press release, "The United Nations system in China is taking an active role in complementing the Government of China's laudable efforts in environmental management."

Morey said this on the occasion of world environment day, celebrated today.

The UN official said, "China, faced with critical tasks in addressing environmental pollution, related to air quality, water quality and the management of hazardous wastes, requires increased international development assistance that complements sound national environmental policy."

According to Morey, the UNDP's approach is a threefold one: assisting China in the development of a national strategy within the Eighth Five-Year Plan (1991-1995), the management of a Global Environment Fund, and direct support in the form of technical assistance that is complementary to national efforts.

Last year, the UNDP sponsored three international conferences to draw attention to environmental problems in China, to expose the Chinese to expertise from abroad, and to help them further focus attention on a national program of action. These conferences addressed issues related to environmental pollution, and the integration of economic development and the environment in China.

Another conference, to be held in September this year, is aimed at assessing the impact of coal utilization on the environment.

As part of its responsibilities in managing the Global Environment Fund, the UNDP has been working with China and the World Bank to develop projects worth approximately 30 million U.S. dollars for implementation under the fund, aimed at the control of greenhouse gases, the development of coal-bed methane, the management of harbor waste, the protection of biodiversity and the prevention of desertification.

Several UNDP-assisted activities have been implemented in the areas of water resources, forestry, ozone depletion, and coal utilization around China, all of which have strong environmental implications.

Morey pointed out that the devastation of the earth's environment—from ever-increasing numbers of people,

ever-increasing demands for resources and ever-increasing pollution—has reached a crisis level. "Only action to achieve sustainable balance between human populations and their rational use of resources can reverse this trend," he said.

According to him, other UN organizations, including the UN Population Fund, the Food and Agriculture Organization, the World Food Program and the World Health Organization, have also assisted in the preservation and enhancement of the environment in China.

Climatic Changes To Greatly Affect Environment

*OW0605110691 Beijing XINHUA Domestic Service
in Chinese 0839 GMT 5 Jun 91*

[By reporter Zhu Youdi (2612 1635 2769)]

[Excerpts] Beijing, 5 Jun (XINGUA)—Climatic changes resulting from human activities will produce a great impact on China's environment. The results of research conducted by a work group composed of experts from the State Environmental Protection Bureau and seven other ministries and bureaus show that higher temperatures will affect China's agriculture, water resources, forestry, and the frozen earth regions in the Qinghai-Tibet Plateau, Qilianshan, Tianshan, Altay Mountain, and Greater and Lesser Xinganling. The rising sea level will also bring great losses to China's coastal areas. [passage omitted]

In the past 10 years, temperatures over large areas in China have been on the rise. Warming has occurred primarily in North China, Northeast China, the northwest, the Qinghai-Tibet Plateau, as well as the coastal areas south of Nanling. Experts maintain that many developing countries located in arid and semi-arid regions, such as the ecologically fragile and tropical zones, will receive the most powerful impact from global environmental changes. China is located in one of these ecologically fragile zones. [passage omitted]

China is among the countries with the lowest per capita allocation of water resources in the world. Experts maintain that the arid and semi-arid zones in the north are areas where water resources are most sensitive to climatic changes. It is estimated that under ordinary circumstances, South China and the coastal areas in the north will experience the most acute shortage of water resources in winter, while North and Central China will experience the most water shortages in summer. Due to the effect of higher temperatures on soil moisture, South China will become markedly drier in winter. In summer, with the exception of the East and South, all parts of China will become drier. Northwest, southwest, northeast, and central China, in particular, will most probably turn dry. [passage omitted]

An official of the State Environmental Protection Bureau said: "Climatic Changes—A Need for Global Cooperation" is the theme of this year's World Environment Day. While constantly making efforts to solve

domestic environmental problems, China will strive to solve the problem of the global environment, so that, through international cooperation, global warming can be stopped or at least the effects of climatic changes can be reduced.

Government Strengthens International Environmental Activity

*OW0706015591 Beijing XINHUA in English
0053 GMT 7 Jun 91*

[Text] Beijing, June 7 (XINHUA)—In recent years China has been actively participating in international activities related to environmental protection and playing an increasingly important role in the field.

Last year alone China sent more than 120 environment delegations to other countries and received environment delegations from over 50 countries.

Since the implementation of reform and open policies, China has strengthened its international cooperation in environmental protection by joining the "international union for the conservation of nature and natural resources", the "plan of man and the biosphere" and many other international environmental protection organizations.

China has helped train 60 special personnel in desert-control from Asian, African and Latin American countries, and dispatched desert experts to work in some African countries. Meanwhile, it has invited hundreds of foreign experts to China to give lectures or hold seminars on environmental protection.

Last year China signed protocols and memorandums on environmental protection projects with Mongolia, the Soviet Union, Finland, the UN Development Program and some other countries and international organizations.

REGIONAL AFFAIRS

Pacific Commission Protests Over French Nuclear Tests

PY3105185191 Madrid EFE in Spanish 1836 GMT
30 May 91

[Text] Santiago, 30 May (EFE)—The Permanent South Pacific Commission (CPPS), which comprises Colombia, Chile, Ecuador, and Peru, has lodged a protest with the French Government over a new nuclear test that this country performed at the Mururoa Atoll in the Pacific Ocean.

A communique signed by Teodoro Bustamante, CPPS assistant secretary general for legal affairs, states that tests were performed on 7 and 18 May at the French test site.

The note said that the CPPS general secretariat, which is headquartered in Santiago, "complying with the mandate received from CPPS members, reiterates a declaration that it released on 9 May, following the first test."

The note said that the declaration "once again expressed categorical and adamant repudiation for that type of test, which entails serious risk for the maritime environment and for marine resources."

The note concludes by stating: "This general secretariat strongly deplores that France persists in performing these tests despite the extended protest of nations, especially those of the Pacific basin. It will not give up its permanent demand for the immediate and definitive termination of such tests which cause so much concern."

TAIWAN

Council Declares Disaster Areas as Drought Spreads

OW0606090291 Taipei CNA in English 0809 GMT
6 Jun 91

[Text] Taipei, June 6 (CNA)—With the current drought worsening, the Council of Agriculture (COA) yesterday declared Tainan and Kaohsiung Cities and Pingtung County "disaster areas."

Six other counties—Yunlin, Chiayi, Tainan, Kaohsiung, Taitung and Hualien—had earlier been declared drought-hit "disaster areas."

According to COA standards, a county or city will be declared a "disaster area" where affected farmland reaches 1,000 hectares and property losses exceed 10 million NT [new Taiwan] dollars.

Farmers and fishermen in these counties and cities can apply for emergency loans from local banks and credit cooperatives, COA said.

The council urged the government to set up a supraministerial anti-drought task force to help affected farmers

and fishermen through their current difficulties and to cope with water shortage problems.

COA said water levels in the country's major reservoirs have dropped to 15 percent of capacity. The two-month-long dry spell has also caused serious damage to farm crops, and husbandry and aquacultural industries, it added.

Taiwan provincial agricultural authorities estimated that more than 1.31 billion NT dollar worth of farm produce, livestock, shrimp and other fishery resources have been lost during the past two months.

The Environmental Protection Administration (EPA) yesterday announced a package of measures to fight against the current drought.

EPA called on households, factories and fishing pond operators to reduce water consumption and to conserve water resources. It hoped that factories, if possible, would reduce production during the drought in order to curtail waste water emissions.

The agency will tighten its inspections of factory waste water emissions. Those who violate new water pollution regulations will be fined up to 600,000 NT dollars, and those who fail to improve their waste water pollution controls within a specified time will be ordered to suspend operations.

EPA Director-General Jaw Shao-kang directed provincial and municipal environmental protection agencies to intensify checks of river pollution and to clean up the rivers and streams under their jurisdiction.

Yu Yu-hsien, chairman of the COA, said this morning that the country's rice reserves can meet domestic demand for more than one and a half years.

"The current drought will, therefore, not affect domestic rice supplies," Yu told a Legislative Yuan floor meeting.

THAILAND

Growing Pollution Problems in Chao Phya River Surveyed

Situation Outlined

91WN0477B Bangkok BANGKOK POST in English
15 Apr 91 pp 27, 38

[Second of three articles by Wasant Techawongtham: "Lord of Rivers: Nine Years To Live"]

[Excerpts] Is nine years all that Bangkok will have to enjoy the magnificent Chao Phya? That's what academicians and environmentalists have been warning for years. Wasant Techawongtham examines the evidence in this second of three articles on the river.

The Chao Phya is suffocating. By the year 2000, nine years hence, the Lord of the Rivers may well be dead.

The grim prediction first appeared in a study on Bangkok's sewerage project conducted by Japan International Cooperation Agency (JICA) in 1981.

Academics and environmentalists have been repeating it ever since. As recently as three years ago, the National Environment Board included the JICA's forecast in its report on water quality management of Chao Phya and Thachin Rivers.

Essentially, what JICA says is that the lower section of Chao Phya River from Rama VI Bridge to the estuary at low tide would be as polluted and foul-smelling as the dead klongs that are littering Bangkok.

Since the ominous words were written, the sorry condition of the Chao Phya has not changed for the better.

In fact, all indicators of water quality are heading for the worse. For the past several years, the oxygen content, or dissolved oxygen (DO), of the river south of the Memorial Bridge has been hovering near the zero mark. Very few species of aquatic life can survive under such deprivation.

The official standard for that part of the river calls for 2 milligrams of oxygen in a litre of water. Naturally clean water contains at least 7 milligrams.

But even in the water north of the bridge where the DO value is above one, many species find their habitat a tough place to live. A 1990 fishery survey found that fish such as *pla nam nguen* (*Kryptopterus*, sp.), *pla lin mah san* (*Synaptura orientalis*, sp.), *pla lin mah yao* (*Cynoglossus*, sp.), have totally disappeared as far north as Nonthaburi. [passage omitted]

Most kinds of aquatic life and microorganisms need oxygen to live. Rainwater and the movement of a living water body replenish the life-giving element naturally.

Waste products from human activities disrupt this natural process and speed up the depletion of oxygen in the water.

These organic pollutants require a high volume of oxygen in order to decompose. The rate at which the process of decay consumes oxygen, technically called biological oxygen demand (BOD), is a useful indicator of how dirty the water is. The higher the demand, the more rubbish there is in the river.

Studies have found, not surprisingly, that the BOD level is on the upward swing throughout the Chao Phya. The lower section particularly has long exceeded the set standard of 4 milligrams per litre.

What is happening in the middle section of the river, specifically at Tambon Sam Lae in Pathum Thani, is worth watching out for. This is where the Metropolitan Waterworks Authority draws its raw water and processes it into most of the water feeding Bangkok.

Here, as elsewhere, the BOD value has been rising during the past several years, and has presently gone beyond the acceptable standard.

Because of the lack of a proper sewerage system, the waste from activities that a person performs in private eventually finds its way to the river.

Faecal matter is found in abundance in the Chao Phya, particularly in its lower reaches.

The faeces may not appear entirely in their original form. But their presence can be traced from the number of bacteria that thrive in a decaying environment, and of those that normally reside in the digestive systems of humans or animals.

Called coliform bacteria, they carry several water-borne diseases affecting the digestive tract. Some of them are highly contagious. Cholera, dysentery, diarrhoea, typhoid, and hepatitis are some of the diseases.

The past six years have seen a sharp increase in the number of coliform bacteria in the lower and middle sections of the river, far exceeding the specified amounts.

Klong Phra Khanong, where it flows into the Chao Phya, bears an unenvied reputation as the most polluted water body in the country. Water samples taken in 1989 contained more than a million of the unfriendly bacteria in a coffee cupful. The limit set for the river's mid-section, where raw water is drawn, is 20,000. [passage omitted]

Agriculture nowadays, unfortunately, is dependent on chemicals. Its waste stream carries DDT, dieldrin, heptachlor, phosphorus and nitrogen in the forms of ammonia and nitrates.

Factories, meanwhile, produce waste that contains many heavy metals. Cadmium, chromium, lead, nickel, copper, manganese, and mercury are among those found in the river.

Currently, there are few available data on inorganic wastes in the Chao Phya. This is quite disturbing in light of their known harmful health effects and their long-lasting nature. In a worst-case scenario, some chemicals could alter the human genetic makeup.

By all indicators, the Chao Phya is in a critical condition. The lower section is already in a coma. When death comes, it will be the first to go.

What has brought about the suffocation of the majestic Chao Phya? In a nutshell, rapid population growth and industrialisation are the main culprits.

Garbage, produced by the 10-million population in the mega-city of Bangkok, are choking the river, overwhelming its capacity to absorb waste. [passage omitted]

Each day, Bangkokians throw away more than five million kilos of trash. Only about 4.3 million kilos of it are collected. About 10 to 15 percent of it is processed into fertiliser. The rest is piling up in landfills.

Meanwhile, the uncollected trash makes an eyesore of the landscape. Much of it joins the streams of bodily waste and water run-off from landfills, flowing into klongs and the Chao Phya. [passage omitted]

Pollution Statistics

91WN0477B Bangkok BANGKOK POST in English
15 Apr 91 pp 27, 38

[Article titled "Drawing Tap Water From a Dirty Stream"]

[Text] Bangkok gets most of its water from the Chao Phya River. This fact should not startle anyone; it is widely known.

What is startling, however, is that the section of the river where the Metropolitan Waterworks Authority (MWA) draws its raw water is at Tambon Sam Lae in Pathum Thani, 90 kilometres from the river mouth. That part of the river has been increasingly polluted.

The river at Sam Lae is designated water level 3 (see table). Analyses of all indicators revealed the water quality is rapidly going down hill.

Classification of the Chao Phya River

Level	Kms	Landmarks	Standard Values of Indicators		
			DO, mg/l	BOD, mg/l	Coliform, MPN/100 ml
2	142-379	Ayutthaya to Nakhon Sawan	6	1.5	5,000
3	62-142	Nonthaburi to Ayutthaya	4	2	20,000
4	7-62	Samut Prakarn to Nonthaburi	2	4	—

DO = dissolved oxygen, BOD = biological oxygen demand, MPN = most probable number.

Thamrong Thammakasem, MWA's director of water quality control division, expressed alarm at the facts in an article he wrote for an MWA publication last September.

Chao Phya water quality at Sam Lae Drawing Station, Pathum Thani, during summer (Jan-May)

Year	Diluted oxygen (mg/l)	Biol. oxygen demand (mg/l)
1984	3.5	1.4
1985	3.3	1.3
1986	1.1	2.3
1987	2.9	1.9
1988	4.0	1.2

"The DO of raw water at Sam Lae drawing station which normally should be 4 mg/l has decreased to 1.8 mg/l," Thamrong wrote.

"The BOD should not be over 2 mg/l, but now has increased to 4.6 mg/l. And the volume of bacteria has shot up to 700,000 colonies in 100 millilitres of water."

The level-3 standard for coliform bacteria is set at 20,000 in 100 millilitres of water. Water samples taken by the MWA between 1981 to 1990 showed that the number of bacteria fluctuates between 58,000 to 323,000, way above the standard.

Thamrong hastened to add in his article that: "Once the raw water enters Klong Prapa, cleansing and sediment-settling processes occur naturally, pushing the water quality back up to standard." Klong Prapa carries water from the river to the city's main water-processing plant.

If the standard is not attained, chlorine will be added to the water, and the tap water eventually produced will come within the drinking water standard, he wrote.

By the MWA's own statistics, increasing quantities of chlorine have to be added to the raw water every year. This, of course, makes tap water production more expensive. Heavy use of chlorine also means the water gives off an unpleasant odour. The health effect is not clear.

Worsening pollution of the Chao Phya has caused enough concern that an area of 350 square kilometres around Sam Lae has been declared a "raw water conservation zone" in 1979. No new factories will be allowed in this area.

The benefits from such a measure are dubious, however. Given that the no-new-factory policy is strictly enforced and the existing factories in the area are strictly controlled, there are still no effective measures to prevent communities and factories above the zone from discharging their noxious wastes.

In the meantime, the MWA forecasts that the volume of raw water drawn from the Chao Phya will reach its capacity by the year 2000, the year the Lord of Rivers may expire.

Volume of water drawn from Chao Phya and underground in the course of water production

Year	Chao Phya (m ³ /day)	Percentage change	Underground (m ³ /day)	Percentage change
1982	1,000,000	—	447,000	—
1983	1,100,000	+10.0	350,000	-21.2
1984	1,700,000	+54.5	272,365	-22.2
1985	2,100,000	+23.5	290,800	+6.8
1986	2,230,000	+6.2	193,670	-33.4

Volume of chlorine used in water production

Budget year	Average vol. (mg/l)	Percentage change		Cost (baht/m ³)
		(yearly)	(since '82)	
1982	2.12	—	—	—
1983	2.27	7.07	7.07	—
1984	2.50	10.13	17.92	—
1985	3.04	21.60	43.39	—
1986	3.49	14.80	64.62	0.0221
1987	3.57	2.29	68.40	0.0236
1988	3.61	1.12	70.28	0.0250
1989	3.31	-6.31	56.13	0.0269
1990	3.38	2.11	59.43	0.0319

Projected water volume drawn from Chao Phya

Year	Volume (m ³ /second)
1987	30
1988	40
1992	45
1994	50
1997	55
2000	60

Pollution Sources

91WN0477C Bangkok *BANGKOK POST* in English
15 Apr 91 p 38

[Article titled: "Where the Pollution Comes From"]

[Text] Study after study has indicated that garbage from communities is responsible for three-quarters of the waste load in the Chao Phya. Factories contribute only a quarter.

Communities may be broken down into households, restaurants, fresh markets, hotels and condominiums, hospitals, shops, and others. Households and restaurants are the main waste producers; households contribute 40 percent, restaurants 27 percent.

The figures give an impression that these two are the main polluters. Officials go by this assumption and focus most of their attention on them.

Industrial wastes receive secondary treatment. The official line of argument is that factories are already required by law to install waste-water treatment systems, while no similar law exists to regulate waste disposal by households.

Moreover, the location and number of factories are known. So they are more easily monitored. The Industry Department conducts periodic inspection of the plants and the waste water they discharge.

Also, officials say, what causes heavy pollution to the Chao Phya at the present time—what turns the water

black and smelly—is organic matter which comes from household waste. This must be tackled first.

If household waste disposal can be controlled and the water runoff can be collected and cleansed before being released into the water, they argue, most of the current problems will have been solved.

The conclusion sounds reasonable. But the little attention paid to the way factories dispose of their wastes and their compliance with the law is still troubling.

An official at the Industrial Works Department said that before a licence to operate a factory can be issued, officials have to ensure that the applicant has complied with all requirements including the installation of a waste-water treatment system. This is followed by periodic inspections, he said.

But many loopholes exist.

Currently, the law can only be applied effectively to factories of relatively large size and to newly established ones. Existing small and medium factories, whose number vastly exceeds that of the large ones, are not likely to have a waste-water treatment system.

For those which do have such a system, a survey by the National Environment Board of factories in Samut Prakarn found that only 60 percent actually run their systems. Additionally, the efficiency of the systems in operation is rated at only 68 percent on average.

Then, there is a problem with enforcement. Sarot Prasathika, an Industrial Works Department unit chief directly responsible for monitoring the Chao Phya, said the department has some 1,200 officials to monitor factories across the country. A third of them are in Bangkok and the surrounding areas.

He insisted that all factories with a waste-water treatment system were running their engines regularly, and thorough inspection had been done on all factories, with the larger ones receiving priority.

He admitted, however, that some factories may have stopped their engines, especially at night when there is no danger of being inspected.

Sarot also said that the efficiency of all systems was found to be up to the standard.

Sources of organic pollutants entering the Chao Phya within 100 kilometres of the river mouth

Source of organic pollutants	Biol. oxygen demand (kg/day)	Percentage of total
Residential	74,182	40.4
Services (restaurants, fresh markets, hotels, guesthouses)	59,070	32.2
Industrial	46,403	25.3
Other	3,967	2.1
Total	183,622	100.0

His information is in sharp contrast with that contained in published reports.

A paper presented at a seminar last year on waste-water management in the Bangkok metropolitan area stated that the Industrial Works Department had only 143 officials responsible for 50,000 factories. Averaged out, one official has to monitor 350 factories.

The budget allocated for inspection was about 1,900 baht per factory in 1989, the paper added.

An NEB official, asked to comment on Sarot's statement, smiled and said: "In his position, I guess he has to say that."

What is most troublesome, however, is the lack of information on the pattern of use of industrial raw material and the movement of hazardous wastes from factories, and the low priority given to the problem.

Another 1990 seminar report stated that over 90 percent of hazardous waste in the water of the Chao Phya came from industrial activities. It also said 9,970 factories in the metropolitan area discharged about 800,000 tons of hazardous waste each year.

These substances do not affect the BOD level to any great extent. They do not turn the water black or cause foul odours.

They do tend to accumulate in the river bed, however. By passing along the food chain, they pose a long-term threat to people and animals alike.

The most insidious consequence of this is the potential of some of these substances to cause irreparable genetic damage.

Environmental Plan for Eastern Seaboard Reviewed

BK2905033391 Bangkok BANGKOK POST in English 29 May 91 p 19

[By Errol de Silva]

[Text] Thailand's environmental impact assessment (EIA) plan for the giant Eastern Seaboard project, adopted as a case study by the Economic and Social Commission for Asia and the Pacific (ESCAP), is finding wide acceptance among countries in the region.

Regional interest in the Eastern Seaboard EIA plan to save coastal ecosystems originated with ESCAP's earlier baseline study on an environmental and socioeconomic management plan for the inner sector of the Gulf of Thailand.

This is part of an ESCAP regional project aimed at protecting the marine environment and related ecosystems.

Dr. Kazi F. Jalal, chief of ESCAP's Industry, Human Settlements and Environment Division, said the decision to adopt Thailand's Eastern Seaboard EIA plan grew out of the realisation that the Thai plan was best suited for implementation by Asian-Pacific countries which were relatively advanced in the industrialisation process and which had major urban centres.

Dr. Jalal said efforts to monitor the progress of the EIA plan for the Eastern Seaboard had continued since the baseline study was launched in 1986. Response from the Office of the Eastern Seaboard Development Committee had been extremely encouraging, he said.

One positive result emerging from ESCAP's coordination efforts in promoting the method for environmental impact assessment among regional countries has been the recent implementation of a wide-ranging programme of study comprising a strong regional representation at different levels.

The programme entailed organising a training workshop for local experts, a consultative meeting of senior officials and an expert group meeting, all focusing on the common theme of the environmental assessment of industrial and urban development in coastal areas, with Thailand's Eastern Seaboard being taken up as the model.

Dr. Jalal said computer models of Thailand's Eastern Seaboard Development Project, which could be adapted to help many South and Southeast Asian countries minimise pollution from coastal industrial and urban development, were unveiled during the February programme.

At the first training workshop at ESCAP, experts from Thailand's Eastern Seaboard Development Project,

National Environment Board and Industrial Estate Authority of Thailand were briefed on how to use the models.

Simultaneously, senior officials held a meeting at Bangkok's Imperial Hotel. Senior officials from Bangladesh, China, India, Malaysia, Pakistan, the Philippines, Sri Lanka and Thailand explored the EIA plan at greater length.

Dr. Jalal said ESCAP decided to jack-knife the work at this senior officials' meeting with another convened to consider a regional strategy on environmentally sound and sustainable development (ESSD).

There the senior officials and representatives of a number of international agencies unanimously adopted the ESSD strategy which was then endorsed by ESCAP's annual ministerial-level session in Seoul, South Korea, last month.

Perhaps the most far-reaching study of the Eastern Seaboard EIA plan as one that could be adopted by regional countries was undertaken at a consultative meeting in Rayong in February.

Among the original objectives of the ESCAP pilot project in respect of the Eastern Seaboard EIA plan was an effort to share the experience of the case study with other regional member countries, especially those of ASEAN.

Four priority areas were identified:

- The identification of potential environmental issues arising out of the Eastern Seaboard Development Programme (Laem Chabang and Map Taphut areas), individually as well as in an integrated way based on a predictive model framework.
- Assistance in the design of a long-term monitoring system to assess the changes in environmental quality in the project areas.
- Assistance in the development of regulations and guidelines as well as technical measures to mitigate environmental problems.
- Dissemination of information and experience gained through the project to the other interested countries of the region.

According to Dr. Jalal, the three meetings in February also marked the final phase of the ESCAP project to promote the concept of environmental impact assessment for coastal industrial and urban development in the region.

It has been found that while a majority of countries agreed that the ideal instrument for assessing the desirability of development is an EIA study, they acknowledge the fact that little expertise is available to carry out

comprehensive and integrated evaluations of multi-industry projects such as the Eastern Seaboard Development Project.

Under the ESCAP project, Phase I was devoted to the collection of data relating to environmental issues and on the Eastern Seaboard project itself, and to determine environmental conditions in the region.

Air and water quality monitoring and modelling methods were developed for the Eastern Seaboard project under Phase II of the project, which also called for the formulation of a hydrodynamic model for the upper Gulf of Thailand.

Strong interest among ESCAP countries in how various industrial projects are implemented under Thailand's Eastern Seaboard projects was heightened after the three February meetings in Bangkok.

Some countries have expressed interest in making direct contact with the Eastern Seaboard Development Project with a view to formulating similar environmental impact assessment plans of their own.

Target Date for Engines To Use Unleaded Gas

91WN0477A Bangkok BANGKOK POST in English
30 Apr 91 p 17

[Text] The Government will require all new motor vehicles to have catalytic converters by September 1993, in the hope unleaded gasoline (ULG) will be on sale nationwide by then to fight worsening air pollution.

Director of the Office of the National Energy Policy Committee Piyaswasdi Amaranand said the requirement follows the Government ordering the lead content in gasoline to be reduced to 0.15 grammes/litre by January. ULG will be available in some gas stations next month.

By September 1993, all new vehicles will be powered by ULG, Mr. Piyaswasdi said.

To encourage use of ULG, public relations campaigns will be launched through all media and the price of ULG will be cheaper than premium gasoline by 30 satang per litre.

Mr. Piyaswasdi said vehicles 10 years old or more can be powered by ULG or switched to leaded gasoline if needed.

All oil companies have also promised they are ready to distribute ULG in Thailand soon, Mr. Piyaswasdi said.

The Petroleum Authority of Thailand's deputy governor, Somsakdi Prasomphol, said the PTT is scheduled to sell ULG at 41 gas stations in Bangkok and its outskirts next month as a first step.

Sales will be expanded to 10 more provinces in the central region by July to boost consumption of ULG.

Shell Co. of Thailand said it will also sell ULG at 63 gas stations in Bangkok and on its outskirts from next month and will provide motorists with a consultation service at gas stations.

Caltex Oil Thailand Co. said initially it will import about seven million litres of ULG in August or before from Singapore. The ULG will be distributed through 50 Caltex stations throughout the country.

Mobil Oil Thailand Co. also plans to import ULG from Singapore but cannot confirm when this will be, only that it will be as soon as possible.

Esso Standard Thailand Co. said it will import about two million litres of ULG from Singapore and is scheduled to sell ULG from the middle of next month at 60 stations as its first step. Sales will be expanded nationwide.

REGIONAL AFFAIRS

Hungarian Officials on Bos-Nagymaros Dam Project

*AU2705115591 Budapest NEPSZABADSAG
in Hungarian 23 May 91 p 7*

[Interview with Ferenc Madl, Hungarian minister without portfolio, Miklos Kiraly, adviser to the Hungarian prime minister, and Gyorgy Kiss Samsondi, government commissioner in charge of the Bos-Nagymaros water barrage, by Agnes Federer; place and date not given: "The C Variant Does Not Exist Officially"—first two paragraphs are NEPSZABADSAG introduction]

[Text] According to certain legal experts, the Hungarian-Czechoslovak state treaty that deals with the realization and operation of the Bos-Nagymaros water barrage system was not drafted with the appropriate expertise, and it failed to take fundamental national interests into account.

For example, there are no provisions for a possible modification or termination of the plan. Consequently, many people believe that, in actual fact, the Czechoslovak side cannot be forced to continue with negotiations. Ferenc Madl has been acting as the Hungarian Government's representative at the negotiations concerning the future of investments made into the Bos-Nagymaros project. We asked Madl whether there was any chance of the issue being settled in the near future.

[Madl] We unilaterally suspended our operations, and strictly speaking, we did not only stop work on the Hungarian side because according to the treaty, we should have been working on the Bos part as well. In the meantime, we had discovered that the construction of the barrage would lead to an ecological disaster that could, for example, endanger the potable water reserves of millions of people on both sides of the border. According to the norms of international law, this situation is tantamount to an ecological state of emergency. Furthermore, the treaty stipulated that both sides would devote a lot of care to the cleaning of the water, particularly in the contributory rivers; the treaty also stipulated that both sides would make sure that nearby towns checked their water-polluting activities. This mainly implied obligations on the CSFR side, but at the same time, hardly anything was actually done.

[Federer] Could Hungary's unilateral step be seen as illegal?

[Madl] The aforementioned points already prove that we did not illegally suspend an interstate treaty. Moreover, if a debate were to arise, we have several other arguments to support this statement, of course. We should not take a serious ecological risk just because the water barrage would give us a small energy surplus. However, we do assume responsibility for the consequences of our decision, and it is quite likely that we will have to foot the larger bill.

[Federer] During the last negotiations that you held with Vladimir Meciar (Slovakia's former prime minister), the two countries seemed to find it difficult to come closer to an agreement.

[Madl] That is unfortunately true. Regardless of that, those negotiations were important, and in a way, they were even successful. It was the first time that we could find out how the Czechoslovak side really feels about this problem. Naturally, we had already heard a lot of reports—for example, there is supposed to be a so-called C variant, according to which the CSFR plans to reroute the Danube. At the same time, we have practically not had any official messages or memorandums. Therefore, through this first step, we merely clarified our positions.

[Federer] When can we expect to see the next step, a step that would perhaps bring us a little closer to a solution of this affair?

[Madl] It is now up to the other side to seize the initiative. As you know, Slovakia has appointed a new prime minister since then, but the water barrage is not exclusively a Slovak issue. Vladimir Meciar actually came to Budapest as the representative of the Czech and Slovak Federal Government. At this precise moment in time, we cannot do anything but wait.

[Federer] Many people in Hungary still feel that there is no concrete proof that the constructions in Nagymaros have definitely and irrevocably been halted.

[Madl] From a legal point of view, I think that the decision made by Parliament and the government is so clear that it does not require further confirmation.

[Federer] A lot of time has passed since the suspension and cancellation of investments. However, that has not meant a decrease in maintenance costs and other expenses, which amount to millions of forints. At the same time, the barrage is nearly ready on the other side. What can the Hungarian side do in order to speed up a settlement on the issue?

[Madl] We have to face up to the fact that the Czechoslovak side has pronounced an official 'yes' and that we have replied with a 'no.' We really have to find a way out of this; further delays are not in anybody's interest. The other side is slowly reaching the stage where it could press the start button, but the lock is on the Hungarian side, and they cannot launch the Bos part without that lock. We hope that this peculiar situation will lead to further negotiations—perhaps even this year.

[Federer] What happens if the CSFR also decides to take a unilateral step?

[Madl] You are probably referring to the C variant—that they will create a new reservoir on their own territory, and that they will reroute the Danube to this reservoir. They have not officially announced this plan to us, and it was not referred to at the last negotiations, either. Consequently, we have to behave as though this variant did not exist. We have heard some rumors, and they

have not even been totally unfounded. Indeed, when Vladimir Meciar was here, at a news conference after our negotiations, journalists asked the Slovak prime minister about the C plan (albeit in a veiled manner), and Meciar confirmed that there really was such a variant. This shows that they also want to get out of this difficult situation. At the same time, if they take the international legal and political consequences into consideration, I do not think that they will take this step because it would constitute a violation of Hungary's territorial integrity.

[NEPSZABADSAG] On Tuesday [21 May], the Slovak Government made the following statement: If we fail to reach an agreement with the Hungarian Government on the Bos-Nagymaros affair, we will probably use the C variant to complete the Bos power station in the second half of June. Given that Ferenc Madl was abroad at this point, we asked Miklos Kiraly to react to the Slovak statement.

[Kiraly] We do not consider the Slovak prime minister's statement to be official. On 22 April, we concluded our negotiations by saying that further talks would be held in the near future. Therefore, we do not wish to make any comments on these developments until the Slovak side informs us of their future intentions, either in the form of a letter or in some other official form.

[Federer] Mr. Samsondi, what does the C variant actually mean?

[Samsondi] Hardly anybody has any definite information on this variant because we have never been presented with technical documents or descriptions. After the first rumors, I was charged with looking into the matter, and that is how we know that the Slovaks want to reroute the Danube above Rajka—according to the Paris peace treaty, this is pure Czechoslovak territory—with the help of a fixed high-level dike, diverting the water into a channel built into the flood plains on the left bank, and from there, they will divert the water into an already constructed power canal which will take the water into the Bos hydroelectric power station. We see the Slovak Government's current decision as a tactical step because from a technical point of view, the realization of the C variant is questionable, and from an international legal point of view, it is impossible.

Hungarian-Czechoslovak Danube Dam To Be Dismantled

*LD3005030691 Budapest MTI in English 1318 GMT
29 May 91*

[Text] Budapest, May 29 (MTI-ECONews)—In conjunction with several ministries, the Central Danubian Management Committee and the local councils in the region, the Hungarian Government commissioner in charge of the Danube dam project has just announced a tender for restoring the site at Nagymaros, where the joint Hungarian-Czechoslovakian barrage was to have been built, to its former state.

The rules of the tender have been carefully checked for compliance with international law, and have been found not to violate the Hungarian-Czechoslovakian inter-state agreement about the dam, Gyorgy Samsondi Kiss, Hungarian government commissioner for the dam, told the press here today.

The winning bids for this initial phase will be made public in the autumn, and next year, a similar, international competition will be invited for totally rehabilitating the dam site.

Actual dismantling work on the circular dam will probably start in the autumn of 1992. The costs of the operation are estimated at 3-4 billion forints.

Hungary unilaterally suspended all work on the joint Hungarian-Czechoslovakian project back in October 1989.

If it had been completed, the dam would have supplied 2 percent of Hungary's electricity needs. Total construction costs would have amounted to \$1 billion.

The Hungarian Government withdrew from the dam project because it would have caused irreparable environmental damage, but no satisfactory agreement has been reached with Czechoslovakia about sharing the costs.

BULGARIA

Investigation of Ecological Crisis Resumed

*AU2805174191 Sofia BTA in English 1407 GMT
28 May 91*

[Text] Sofia, May 28 (BTA)—The investigation carried out to find out the culprits for the ecological crisis in Bulgaria has been resumed, sources in the judiciary announced today. It is possible to remove the procedural impediments that made the prosecuting magistracy suspend the investigation proceedings. Prosecutors Dimitur Chavdarov and Kamen Sitniski told the BTA.

The impossibility to interrogate some important witnesses, including Todor Zhivkov, the country's ex No. 1 (who is ill and whose trial has been adjourned), and Ognyan Doynov, member of the former Politburo and Secretariat of the Central Committee of the BCP [Bulgarian Communist Party] (who now lives in Great Britain), will be compensated for by other procedural means.

Besides the about 200 witnesses examined so far, more witnesses will be subpoenaed and further evidence will be gathered.

The prosecutors called on the public for more confidence in the competent authorities. They say that the investigation will be unbiased and a comprehensive one. The conclusion will be made only after all evidence related to the ecological problem in Bulgaria is collected.

The report will be made on the basis of the now operative legislation: the Prosecuting Magistracy will not take into consideration any political, opportunist or group opinions and will reject all attempts to influence its work.

Dozens of Municipalities Consume Polluted Water

4U 3105072091 Sofia BTA in English 2057 GMT
30 May 91

[Text] Sofia, May 30 (BTA)—Seventy municipalities comprising 222 towns and villages, population 193,519, use drinking water the nitrate content of which exceeds the admissible limit of 50 mg/l according to the Bulgarian state standard. In more than 70 towns and villages over 60,000 people drink water containing nitrates over 100 mg/l.

These alarming facts were announced at today's briefing at the Ministry of Health. Experts say that the pollution of water is due mainly to neglected departmental control, as no nitrate fertilizers should be used in water-supply areas. The use of nitrate fertilizers has been increased freely. The sanitary institutions and the local representatives of the Ministry of Agriculture and Food Industry and the Ministry of Environment do not work in collaboration.

The Ministry of Health takes the measures that lie within its competence. First of all, the use of water coming from insecure sources is banned, as well as the use of nitrate fertilizers in water-supply areas. It is seeking opportunities for supplying additionally clean and bottled water where it is possible. Instructions have been issued to sanction breaches severely; legal proceedings will be initiated against offenders.

CZECHOSLOVAKIA

Cabinet Approves Environmental Protection Bill, Reviews Gabčíkovo

LD0706090591 Prague CTK in English 1847 GMT
6 Jun 91

[Excerpt] Prague June 6 (CTK)—The Czechoslovak federal cabinet today approved an environmental protection bill aimed at reducing noxious emissions.

Czechoslovakia is at present one of Europe's biggest air polluters, with 40 percent of its forests damaged and rising emissions of sulphur dioxide and nitrogen dioxide. The bill defines permissible emissions levels and provides for the levying of fines of up to one million crowns on polluters and the closure of the plants involved.

The cabinet also approved a law enforcement bill which divides the existing united "National Security Corps" into federal police forces and those of the Czech and Slovak Republics, whilst clearly defining the powers of the federal force.

The cabinet discussed the results of the April talks between Czechoslovakia and Hungary on solving the

controversial issue of the Gabčíkovo-Nagymaros twin-dam project on the Danube. Czechoslovakia regards Hungary's stoppage of work on its part of the project in May 1989 as a groundless unilateral violation of their 1977 agreement and is going ahead with its own part at Gabčíkovo. Hungary seeks a halt to all work and a new agreement. The Czechoslovak cabinet agreed to propose yet another government-level meeting to Hungary. [passage omitted]

HUNGARY

Environment Minister on First Year in Office

AU0706133391 Budapest MAGYAR HIRLAP
in Hungarian 6 Jun 91 p 5

["K.M."-signed interview with Hungarian Minister for Environmental Issues Sandor K. Keresztes; place and date not given: "Result: Rising Demands"]

[Text] [MAGYAR HIRLAP] What do you consider to be the greatest achievement of the past 12 months?

[Keresztes] The fact that our ministry contributed to a sharp increase in society's demands concerning the state of the environment. With this background, we can look confidently toward the future. In concrete terms, I find it very important that an increasing number of people understand that we have an environment that is made up of both natural and man-made elements. We have created the basis for the most important institutions in this area.

As far as our operative measures are concerned, we can note the particular importance of a government decree that lists a series of measures that several ministries have to take to reduce traffic-induced air pollution.

[MAGYAR HIRLAP] Which goals were you unable to achieve?

[Keresztes] Unfortunately, there is a long list. The most unfortunate shortcoming was the fact that a dumping of bills repeatedly forced Parliament to postpone its debates on several fundamental laws which affect our ministry. The division between environmental protection and water affairs was dragged on for a long time and the effect of this was particularly to be felt in our on-site work. We were unable to convince people that the whole of society shares responsibility for environmental protection.

[MAGYAR HIRLAP] What program does the ministry have for the coming year?

[Keresztes] I think that by now we have achieved the appropriate conditions for peaceful long-term work (apart from our limited budgetary resources, that is). We would like to draft modern laws and apply these with

consistency. We would like to obtain tangible improvements in some severely polluted areas. We hope that the pace of structural change will continue to speed up, thereby enabling us to defend environmental protection and nature protection interests.

We would like to work out an area development concept and a system of means that will allow economic viewpoints to complement environmental protection and nature protection interests, thereby guaranteeing an optimal development.

We need large-scale support for this. That is why I think it is important that we have initiated relations with self-organized civilian movements which deal with the protection of our environment and our towns. I see the development of these relations as a very important task.

Shortfall in Environment Ministry's Budget

LD2805220591 Budapest MTI in English 1233 GMT
28 May 91

[Text] Budapest, May 28, 1991 (MTI-ECONews)—The Hungarian parliament has earmarked 2.2 billion forints from the state budget for the Ministry of Environment and Regional Development this year.

Of this amount, the ministry has allocated 200 million forints for regional development projects.

It has earmarked 27 percent of the remaining 2 billion forints for the environmental protection inspectorates, another 27 percent for monument protection, 17 percent to finance the workings of the ministry, nine percent for nature conservation, seven percent for the meteorological service, and the remaining amount for special tasks and reserves.

Barely half way through the year, and it is already clear that these sums will fall far short of the actual expenditures of the various organizations and services.

The ministry has, therefore, applied for an additional 444.7 million forints in budget support.

As a stop-gap measure, funds have been re-grouped from various areas to meet the ministry of the environment's costs.

Meanwhile, the Ministry of Finance is studying whether any of the budget reserves could be used to supplement the original allocation of the Ministry of Environment.

Annual Environmental Protection Expenditures Noted

LD2905004191 Budapest MTI in English 1336 GMT
28 May 91

[Text] Budapest, May 28 (MTI-ECONews)—Hungary has spent an annual 10-12 billion forints on environmental protection in recent years. Until 1987, this represented over one percent of Hungary's GDP [gross

domestic product], but since then expenditure has dropped below this percentage.

In 1989, 53 percent of the budget went on sewage treatment and water protection, 18 percent on handling waste products, 14 percent on the protection of arable land, 10 percent to combat air pollution, with the remainder going to small projects.

In 1990, 1.1 billion forints was allocated for environmental investment projects from the central environmental protection fund and from the council fund and the water management fund earmarked for the four most polluted counties and Budapest.

This money was raised from fines for environmental offences.

The state also granted 400 million forints for environmental protection, to be repaid on easy terms, and 60 million forints in nonrefundable support. Tenders were invited for potential users of the support.

This year, the situation is different because the council fund has ceased to exist and the part of the water management fund set aside for environmental protection has been transferred to the central environmental protection fund.

The central environmental protection fund expects to have an income of 850 million forints this year, mainly from fines, of which 600 million forints are to be spent on central purposes, 250 million forints will go to local councils who will, however, not be obliged to spend all the money on environmental protection.

Of the 600 million forints, 320 million forints will support environmental protection projects invited by tender. 180 million forints go towards improved monitoring of pollution, to nature preservation schemes and to purchase land for nature reserves. 60 million forints will be spent on research and development, while 40 million forints will be set aside to cover unforeseen expenditures.

This year, the state budget will also grant nonrefundable support of 350 million forints to be made available by tender.

Foreign funding is likely to complement domestic sources. Of this, support from the Phare programme is the most significant, with 25 million ECU [European currency units] allocated to Hungary last year and 10 million ECU this year.

REGIONAL AFFAIRS

Caricom Urged To Increase International Environmental Role*FL0506151391 Bridgetown CANA in English
1158 GMT 5 Jun 91*

[Text] Port of Spain, Trinidad, June 5, CANA—A former advisor to the Caribbean Community (Caricom), Angela Cropper, has suggested regional governments get more involved in international meetings taking decisions on environmental issues. Cropper, who advised the Community on the environment, said Caribbean countries were among the "most vulnerable."

"More of our countries should attend in order to strengthen the position of developing countries, or the island grouping, in the negotiations. In this matter we will not get what we deserve—only what we negotiate," she said.

"It is desirable that a larger group of Caribbean persons be active in that process, and especially for the ministers of external affairs of Caribbean countries to be intimately involved in understanding the issues and following and servicing the negotiating process."

She reported [that] some of the major demands by the Caribbean [nations] at the first negotiating session in the climate convention held in February include immediate and significant cuts in carbon dioxide emissions and other greenhouse gases from industrialised countries, and financial compensation for vulnerable states.

Caricom Head: Global Partnership Needed on Environment*FL0506234991 Bridgetown CANA in English
2033 GMT 5 Jun 91*

[Text] Georgetown, Guyana, June 5, CANA—The fate of Caribbean Community [Caricom] member states is dependent on the attitudes, approaches, and actions of the global community towards the environment, Caricom Secretary General Roderick Rainford said on Wednesday.

In a statement marking World Environment Day, he said the community is conscious that its member states have contributed little to global environmental degradation. He said they have even less capacity to undertake the necessary action to combat the negative results of serious disruptions of the environmental balance.

"Caricom countries are dependent on the partnership of the global community—in particular the developed partners in that community—reducing significantly emissions of carbon and other greenhouse gases and substances which pollute the environment, destroy the ozone layer, and produce climate change," Rainford said.

"Our member states are dependent on the global partnership to provide resources to assist poorer and vulnerable countries to monitor and mitigate the consequences of climate change. In this context, they require practical recognition from the international community of their contributors to global environmental stability which flows from their natural endowments."

He said that Caricom countries are dependent on an equitable global partnership which permits access to clean or more environmentally friendly technologies. They also need a global partnership which ensures equity in the distribution of the gains arising from "environmentally sound exploitation" by all peoples of the resources of the earth, he added.

Rainford noted that the Caricom with its relatively large and open marine spaces, its coral reefs, seagrass beds and mangroves, and extensive forested areas in some member states can and does make a very significant contribution to climatic balances.

ARGENTINA

Menem Commemorates Environment Day*PY0606005091 Buenos Aires Radio Nacional Network
in Spanish 1600 GMT 5 Jun 91*

[Address to the nation by Argentine President Carlos Menem on the occasion of Environment Day, from Government House in Buenos Aires—recorded]

[Excerpts] Fellow countrymen: Rather than the future of Argentina, we are now being called to guarantee the fate of the human species, which is the only one which recognizes the existence of God and the human being. The protection of the human species and the world ecological system is a double mandate which requires the commitment of not only the government but the entire society.

Wastefulness and the use of methods which spread contamination beyond borders are no longer compatible with a world that is becoming even smaller. The model of the consumer society casts sharp doubts on our possibilities for the future. Today nature is giving us a bill, a bill which was not anticipated during the exciting times of the industrial revolution.

Argentina can decide to reverse this situation and prevent an irreversible collapse in the 21st century. From the moment I took power I have been pursuing the objective of humanizing politics and using them for the preservation of environment.

This is not just a metaphor; it is a rule that can be applied. To humanize means to debureaucratize and to reorganize functions. This historic challenge which circumstances have imposed on us demands the urgent consolidation of a new modern state. State reform represents a strengthening of the modern state's typical activities, including environmental control.

The Argentine Government's actions in support of the environment have been based on a policy of steady development with three major aspects: the productive transformation of the economic structure, the need to join the international system, and state reform. These efforts have been coordinated by the National Environmental Policy Commission [Comision Nacional de Politica Ambiental]. The first step was the creation of a plan to assess the situation and to implement initial measures to resolve the most pressing problems. [passage omitted]

The assessment revealed that our first problem in this sector is the lack of an institutionalized environmental policy. I have therefore decided to structure and centralize environmental policy to make more rational use of our resources, improve international cooperation, focus our efforts, and properly implement decisions.

We are adopting measures that will create the State Secretariat for the Environment [Secretaria de Estado del Medio Ambiente], which will be subordinate to the executive branch, the Presidency of the nation. This organization will not cause any increase in bureaucracy, personnel, or expenditures. [passage omitted]

On the regional front, Argentina has agreed to promote a plan of action for Latin American and Caribbean countries and to support the Latin American political platform for development and environmental preservation.

The green plan is another productive project that can be implemented as a self-supporting undertaking. This plan is aimed at implementing an integral policy in the forestry sector which will turn Argentina into a major producer and exporter of wood and wood by-products. Intensive negotiations have been already carried out to arrange the necessary funding to finance this project through existing cooperation agreements on the environment. [passage omitted]

We have created a Federal Environmental Council [Consejo Federal del Medio Ambiente] with the provinces. We have made progress in matters related to assessment and policy with the cooperation of the provinces and other sectors.

I want to stress that education is an essential aspect which will play a key role in the world's future. I have therefore ordered the Secretariat General of the Presidency and the Education Ministry to include the subject of the environment in programs at all educational levels. These two institutions will today sign an agreement to fulfill this objective, in support of this important day for humankind. [passage omitted]

CNEA Resurrects Plan for Nuclear Dump in Chubut

PY0306171691 Buenos Aires NOTICIAS
ARGENTINAS in Spanish 1724 GMT 2 Jun 91

[Excerpt] Buenos Aires, 2 Jun (NA)—According to a Buenos Aires daily, in a few days high-ranking officials

from the National Commission for Atomic Energy (CNEA) will deliver to President Carlos Menem and other government officials a draft proposal to build and operate "a storage facility for highly radioactive waste," also known as a nuclear dump, in Chubut Province.

The newspaper reported that "the feasibility study and the architectural design" are ready. The nuclear waste dump will be built in Gastre, in a mountain range 400 km west of Puerto Madryn.

The draft, prepared by top CNEA officials, states that it is necessary to build this facility in Chubut "to close the nuclear fuel cycle."

Scientifically speaking, the "nuclear waste dump," also known as "geological medium system-engineering barrier-highly radioactive waste container" [sistema medio geologico-barrera de ingenieria-contenedor de residuos de alta actividad], is designed to isolate nuclear waste produced by the operation of nuclear power plants using radioactive fuel such as uranium.

The CNEA officials sponsoring the project, including Elias Palacios, CNEA manager for radiological and nuclear safety, have explained that the country is "already producing nuclear waste" for which "we must find lasting solutions."

The draft, which emphasizes the "feasibility" of the nuclear waste dump, may be submitted to President Carlos Menem, Vice President Eduardo Duhalde, Chamber of Deputies Chairman Alberto Pierri, and Chubut Province Governor Fernando Cosentino. [passage omitted]

BRAZIL

Collor Speaks on World Environment Day

PY0606132891 Brasilia Voz de Brasil Network
in Portuguese 2200 GMT 5 Jun 91

[Excerpts] Brazilian President Fernando Collor said today in Stockholm that the concept of development should be reviewed. He said that efforts to improve economic indicators should be accompanied by a real campaign to preserve the environment.

President Collor made this statement during a ceremony to mark World Environment Day.

[Begin Collor recording] It is now quite clear that growth that is not accompanied by a campaign to curb any ill effects on the environment will merely undermine the very objectives sought, and this can make the search for development and social wellbeing unfeasible. But we should not just disregard the praiseworthy objectives that have been obtained through material progress; it is more a matter of reviewing the very concept of development, a development not just restricted to listing growth statistics but one that includes the improvement of social

indicators, a real and effective concern for the preservation of the environment. [end recording]

Collor said that future prosperity will be feasible only through a necessary balance between development and the preservation of the environment. He added that underdevelopment aids the deterioration of the environment and it is impossible to preserve the environment without improving the living standards of the world population.

President Collor recalled the historic UN World Conference on Human Environment held in Stockholm 19 years ago.

[Begin Collor recording] Since that pioneer conference in 1972 the world has become increasingly aware that its future is definitely subject to the protection of its natural environment. [end recording]

Collor also mentioned the significance of the Environment and Development Conference to be held in Rio de Janeiro in June 1992. On that occasion, he said, the pillars of a more equitable world economic order, from the ecological point of view, will be established.

[Begin Collor recording] Brazil has great expectations. We believe that through this conference the international community is making a great effort to achieve development by guaranteeing free access to technology that is inoffensive to the environment. The world will not miss the opportunity in Rio de Janeiro in 1992 to establish the pillars of sustainable and equitable development for all nations that seek to safeguard and preserve the future of the earth. [end recording]

President Collor added that 1992 will be a year in which to celebrate peace and that the struggle for world peace is a main issue in the Brazilian Government's foreign policy. He mentioned Brazil's decision to sign the Tlatelolco Treaty, the termination of nuclear tests for peaceful purposes, and the upcoming signing of a safeguard system treaty with Argentina as examples of Brazil's disposition.

Today, his second day in Sweden, President Fernando Collor received the symbolic torch of the World Environment and Development Conference to be held in Rio de Janeiro in 1992.

The solemn ceremony was attended to by King Carl Gustaf and Queen Silvia. [passage omitted]

President Collor today asserted that Brazil is striving in a decisive and rational manner to preserve the Amazon region and that the effort has already yielded significant results. He said that the clearing of the forest has dropped significantly during the past few months.

According to the president, Brazil seeks new means of action and that a good example is the creation of a foundation with private and government resources to reforest approximately 200,000 square meters in the

Brazilian Amazon region. He reasserted that the Brazilian peoples' determination to save the Amazon has no limits and that it will be saved.

Collor made this statement during a speech in Stockholm at a ceremony in which the World Environment and Development Conference was symbolically transferred to Rio de Janeiro in 1992. Collor asked that the problems of the great cities in developing countries also be discussed during the 1992 conference. He said that this problem cannot be regarded as secondary or local because it affects millions of human beings. He said that it is a comprehensive problem for many reasons, citing epidemics and population migration.

Another appeal made by Collor was to expedite efforts toward disarmament, taking advantage of the prevailing international detente. He added that if new cooperation schemes between the countries inspired by the desire of social justice are not established, the work of the World Environment and Development Conference will not be based on firm foundations.

Collor said that the 1992 conference in Rio de Janeiro should complete what was started at the Stockholm conference in 1972, and that it should set the grounds for a 21st century based on fulfilled hopes. [passage omitted]

NICARAGUA

Deforestation in Region IV Noted

91P40301A

[Editorial Report] Managua LA PRENSA in Spanish on 23 May 1991 reports on page 3 that Mauricio Cruz, regional representative of the Institute of Natural Resources, has blamed the lack of human and economic resources for deforestation in Region IV. Affected areas include municipalities in Rivas and Granada, the Masaya Volcano vicinity, and areas surrounding Diriamba and Jinotepe. Landless peasants who sell wood in order to make a living, certain cooperatives, carpenters, and sawmills are thought to be those involved in cutting down trees. According to the institute, the worst offender is the mayor of Nandaime, who reportedly destroyed 30 royal cedar and pochote trees.

PERU

Fujimori Condemns Deforestation in Drug Trafficking Region

PY0606175491 Lima RTP Television Network in Spanish 0230 GMT 6 Jun 91

[Excerpts] President Alberto Fujimori, accompanied by 25 ambassadors accredited in Peru, verified today the deforestation in the high Huallaga region by drug traffickers. Fujimori said that the preservation of the environment is everyone's responsibility, specially if it is

being destroyed by drug traffickers. He asked for international cooperation to replace coca in the Peruvian jungle.

[Begin recording] [Fujimori] The reason for this visit is to see the severe deforestation and the degradation of our environment, especially on the hillsides which makes the soil very unstable. We run the risk that the forest may become a desert. This is why I wanted to call the attention of all fellow countrymen, and especially the leaders of the developed countries, so that together we can resolve the problem of drug trafficking. This deforestation is caused by drug traffickers.

[Reporter] Breaking all protocol, more than 25 ambassadors are here in this so-called red zone. You have called upon the industrialized countries to assume their responsibility and help to prevent the deforestation, especially to help rescue youth. Can you explain why you made this call?

[Fujimori] I believe this is not just a Peruvian but also a international responsibility. We take care of our ecology, but due to the implications of drug trafficking, with its international infrastructure, we need the cooperation of the developed countries. This is why I am putting emphasis on two important aspects associated with the environment; with the defense of the ecology, and with the protection of the beauty and the wealth of this region. It also involves the need to rescue and to defend the youth who run the risk of ruining their life through drug addiction. [end recording] [passage omitted]

President Fujimori has called on the peasants of the region to cooperate in the preservation of the environment. He reiterated that the drug agreement signed with the United States will benefit the country.

[Begin recording] [Fujimori] Distinguished guests, this is a special occasion because today we celebrate the Day of the Environment. We have come to this base to become familiar with the details of the drug trafficking problem.

[Reporter] The president is now talking with a peasant who is harvesting coca. This is just a demonstration for the president and the other visitors to see how it is done. [passage omitted]

[Fujimori] The Amazon, with its great jungle, is the lung of the world. This region is vital for the future of humanity and it is being threatened by great dangers

which are changing the environment in an irreversible manner. One of the most serious dangers is drug trafficking, because it destroys the forests and the rivers. My government, as everyone knows, is aware of this threat and has signed an agreement with the United States. We were motivated by our interest in establishing a different program from the ones established in the last few years; programs which have failed to eradicate the coca.

The figures on the growth of coca cultivation are the best indicators of the current situation. The plantations have increased from 45,000 hectare in 1980 to 210,000 hectare in 1990.

Disregarding the other problems related to drug trafficking, this progress shows the inefficiency of the old projects. It represented the destruction of the soil and forests as you have just seen, and this destruction is not just restricted to this region.

This is not the occasion on which to reiterate my government's position on the various questions posed by various political groups. I just want to reiterate that this bilateral agreement, signed through the powers vested in the president under the Constitution, has some characteristics which have created concern. There are two forgotten participants in the drug trafficking problem: they are the peasant coca growers and the earth.

We have clearly stated that the peasants are the key element in the reduction of coca supply, but they are not the first link in drug trafficking. They are the valid example for replacing coca. Instead of considering them as enemies, the state should motivate them to become fully integrated in legal activities. The majority of the one million peasants are poor and exploited. They can participate either in the destruction or the defense of the ecology.

The other element is the earth which bears the forest. The agreement signed with the United States establishes the framework within which the actions for the conservation of the soil, the forests, and the protection of animal life will be drawn. Within this framework we hope to establish goals, with the appropriate budgets, to stop the destruction of our land and forests.

We do not discard the possibility of obtaining important deductions from the foreign debt, deductions that will be used for an ecological program. All Peruvians, and all the people of the world, must become aware of the process of deforestation in Peru and the future negative consequences. [passage omitted] [end recording]

REGIONAL AFFAIRS

Kuwaiti Minister Reports 131 of 500 Oil Well Fires Extinguished

LD2805220691 Riyadh Saudi Arabian Television Network in Arabic 2049 GMT 28 May 91

[From the "Kuwait Message"]

[Text] The [Kuwaiti] oil minister, Dr. Hamud 'Abdallah al-Mubah, yesterday announced that fire-fighters in Kuwait have extinguished 131 burning oil wells out of over 500. He said that Iran has taken part in the efforts aimed at extinguishing the fires set alight by the Iraqi troops before their destruction and defeat in Kuwait at the end of the Gulf war last February. Moreover, Kuwaiti sources in Esfahan [Iran] have reported that the Kuwait Oil Company yesterday Sunday [as heard] signed an agreement with the Iranian National Oil Company to provide Kuwait with a team of [Iranian] fire-fighters.

Kuwait Oil Smoke 'Enveloping' Bahrain

JN3005171591 Manama WAKH in English 1540 GMT 30 May 91

[Text] Manama, May 30 (GNA)—Experts are to meet in Bahrain next week to assess the preliminary findings of air pollution monitoring in the Gulf.

The meeting will bring together specialists from Bahrain and other Gulf states, according to Environmental Protection Committee (EPC) Vice-Chairman Khalid Fakhru.

He said the meeting was being organised by the EPC in conjunction with American and German teams now in Bahrain to collect data on air quality.

"We will discuss the preliminary findings [of the] teams," said Mr. Fakhru in a statement published today.

He said the meeting was being held next Tuesday at the Arabian Gulf University College of Medicine and Medical Sciences.

"The teams have been making air- and land-based measurements and the meeting will be a sort of disclosure of what they have found so far," said Mr. Fakhru.

He said experts being invited for the meeting include doctors, meteorologists, university researchers, and environmentalists.

"We are inviting professionals who are concerned with the findings of the air monitoring effort," said Mr. Fakhru.

Meanwhile, smoke from Kuwait's burning oil wells was extending along the Gulf, enveloping Bahrain on its way, said EPC senior chemist E. Raveendran [name as received].

"Most of the smoke is travelling towards the sea, covering Bahrain," said Mr. Raveendran, who spent seven hours in an aircraft monitoring air quality, on Tuesday.

The aircraft, operated by the U.S. National Centre for Atmospheric Research (NCAR), is fitted with special equipment to measure the composition of the plume.

The measurements will define how the plume is moving in space and time.

"Because of the wind direction, the smoke has travelled to Oman," said Mr. Raveendran.

"The plume is constantly over the sea and it is mostly the coastal areas that are affected.

"There are certain areas completely black with smoke." He said the main problem was soot.

"Values of chemical components such as sulphur dioxide remained low. These will not exceed international standards," said Mr. Raveendran.

BANGLADESH

Bengal Bay Fish Threatened by Pollution

91WD0769A Dhaka THE BANGLADESH OBSERVER in English 7 Apr 91 pp 1, 10

[Text] Chittagong, Apr. 6—Fish and other aquatic species are on the verge of extinction in the Bay of Bengal along the Anwara-Mirsarai coastal line because of environmental pollution, a recent publication of the Department of Environment said, reports BSS.

A study conducted by environment experts revealed that the sea along the coastal line was highly polluted for various reasons, including indiscriminate discharge of oils, chemicals, bilge water, garbage, debris and other rejected substances mainly from ships and industrial units.

Mangrove forests, fish and other sea products are also threatened along the entire coast line of Bangladesh on account of unabated pollution which had caused destruction to 16 lakh cubic meter of sundari timber worth nearly Taka 400 crore since 1976, while the vast fish resources of the Bay have become scarce along the coast line. In [the] last decade, the river mouths, including Karnaphuli Estuary, which were full of fish [un]til [the] later part of the seventies, are now almost without fish and the fishermen now have to ply fishing boats to deep seas for commercial fishing, the survey revealed.

The rate of pollution in the Bay of Bengal was [is] so fast that if it is not checked in time, the situation might turn serious like that of [the] Baltic Sea, where water contains no oxygen, causing total extinction of fish, it pointed out.

The Department of Environment identified eight causes for pollution of the Bay of Bengal and the rivers where industrial refuses are discharged regularly. These are

discharge of oil, ballast water, bilge water, garbage of ships, dismantling of ships, chemicals, industrial and domestic garbage and black smoke.

Nearly 1,200 ships, including 60 oil tankers, are handled at Chittagong Port and 600 ships at Mongla Port annually while thousands of other mechanised crafts ply through the port channels throughout the year, discharging oil into water intentionally or unintentionally, during [the] taking [on of] fuel and also during charge and discharge of oil from oil tankers at oil terminals.

About 60,000 metric tons of oil is spilled into [the] water of [the] Chittagong Port channel from ships, heavy petroleum and other industries located around the port. Ballast water of oil tankers are [is] also discharged into the channel here, the survey further revealed.

Ship garbage and bilge water from ship engine room[s] also cause severe pollution. Dismantling of ships at Chittagong and Khulna coasts also cause pollution as the ship breakers directly throw oil, grease, etc., of scrap ships into the sea.

Chemical items and garbage from industries cause destruction of oxygen in water, resulting in the death of aquatic living beings. Polluted air, when it comes in contact with water, also causes water pollution.

Department of Environment observers said that such pollution could be averted by setting up treatment plants for treating the discharges.

EGYPT

Paper Cites Plans for Cairo Environmental Center

NC0506120291 Cairo Arab Republic of Egypt Radio Network in Arabic 0335 GMT 5 Jun 91

[From the press review]

[Text] AL-AKHBAR says that the establishment of the largest international center for the environment is planned for Cairo and will serve Arab and Mediterranean countries. The United Nations is contributing \$5 million to the establishment of the center, which will carry out research in four major fields: water resources, desertification, industrial pollution, and pollution of beaches and sea water.

Issue of Chemical Waste Dumping in Nile Explored

91WN0400A Cairo AL-WAFD in Arabic 5, 6, 8 Mar 91

[Report by Muhammad Raghib and Nayyifin Yasin]

[5 Mar p 3]

[Excerpt] [passage omitted] The pollution disaster of the Nile goes beyond the damages caused by the use of chemical pesticides to counter the Nile lily [nelumbo]. Official documents reveal that factories and facilities of

both the private and public sectors are the main polluters of the river, and the Public Works and Water Resources Ministry is helpless in confronting these factories, which discharge their toxins into the Nile. The ministry can only write out violations and cessation decrees [qararat izalah], which are nonetheless not implemented. Between the promulgation of Law No. 48 of 1982 Regarding the Protection of the Nile and Water Channels From Pollution [hereafter referred to as Law No. 48 of 1982] and 1989, about 15,007 violations and cessation decrees have been written out pursuant to Law No. 48 of 1982. Only 6,675 have been implemented, and the remaining 8,322 violations have continued to exist. In 1990, this number totalled 18,879 violations, of which 7,773 were eliminated and the remaining 10,106 continue to exist. The number of Nile pollution violations increased in 1990 by 3,872 compared to 1989, and the number of violations that were eliminated in 1990 compared to 1989 dropped by 1,088. This means that the Nile is being polluted more and more each year by the discharge of factories. This warns of a disaster caused by industrial waste containing heavy elements and lethal chemicals flowing into the Nile. Those are the facts, and here are the details:

The Government...the Pollution of the Nile

Engineer Mukhtar 'Imarah, the deputy minister of public works and water resources for the maintenance of water channels and the protection of the Nile, believes that the Nile's position and the facilities it offers have long encouraged the government and individuals to build factories on its banks to benefit from its navigational water course, bridges, broad expanses of water, the water is supplies for industrial operations, and the fact that it is regarded as a drainage canal for factory waste. The Public Works Ministry surveyed a number of factories built on the Nile from Aswan to Cairo and found that 66 factories and different installations discharge no less than 1 million cubic meters [cu m] of industrial waste into the Nile daily. The survey further showed that most of these factories treat their industrial waste discharge in stages by means of treatment units within them, but not with a high degree of efficiency. For example, sugar factories stop treatment at the first stage. That is not final treatment. Also, the Kima Factory discharges waste into the Nile, and the cement factories discharge millions of tons of byproducts into the Nile.

In view of the danger of this problem, Eng. Mukhtar 'Imarah states, the ministry formed a subcommittee emanating from the Pollution Fund Committee for Law No. 48 of 1982 to study the situations of all factories that discharge into the Nile and water channels. The subcommittee was tasked with ascertaining their compliance with the law, which requires them to install on-site treatment units. A pollution report and cessation decree are written out against factories not in compliance, including factories of both the public and private sectors. These reports are then sent for implementation to the security administration of the governorate in whose jurisdiction the violating factory lies. However, given

that most of these factories were built long ago, and we cannot shut them down, we are satisfied with repeated reports of violations on a monthly basis. A repeat violation entails either an increase in the fine by 500 to 2,000 Egyptian pounds, or imprisonment of the factory owner or its board chairman for six months to two years, or both penalties. Hence, the governors have to cooperate with the Public Works Ministry to implement the reports and cessation decrees written out by the ministry's administrations and control boards in all of the governorates.

The Industry Ministry Acknowledges

At the Industry Ministry, we tried to interview any official for answers to a number of questions about the problem of industrial discharge, the topic of this report. However, such an interview was not feasible for reasons stated by the head of public relations in the ministry. In lieu of an interview, we will cite the Industry Ministry's report which covers this problem. The report states: The ministry's activity regarding environmental protection began in 1979, when a general environmental protection administration was established and Ministerial Decree No. 380 of 1982 was issued regarding the need for factory equipment lists to include treatment units and environmental protection equipment. After Law No. 48 of 1982 was promulgated, the Industry Ministry introduced a program to protect the Nile River from the effects of industrial discharge in 1985. The ministry approved the program, which cost 75 million Egyptian pounds, on 8 May 1985. It signed a protocol with the Environmental Affairs Agency, which included six factories at a cost of 24 million Egyptian pounds. Only 5 million Egyptian pounds were provided, and the companies assumed responsibility for the balance of the sum.

The report quickly moves on to present a number of obstacles which the ministry faced regarding the implementation of its environmental programs. First, the legislation currently in effect is incompatible with the circumstances and economic and technical capabilities, which makes compliance problematic. Therefore, environmental laws should be reviewed and all concerned parties should participate in formulating a law and drafting guidelines for each industrial sector separately according to type and geographical location. Second, according to the report, the financing needed for treatment operations negatively affects the implementation of environmental projects, because financing is provided by only the Environmental Affairs Agency or the budgets of companies, which are approved by the Planning Ministry. Several companies have thus been compelled to implement environmental projects through grants and loans. Therefore, the ministry calls for the provision of the investments specified by the plans to permit progress in implementing treatment operations. The report then cites a several recommendations in this regard.

At the end of the report, the Industry Ministry states that it financed treatment operations in ten factories subordinate to it, and that the treatment operations of other

factories were partially financed by the Environmental Affairs Agency or self-financing. Also, some companies subordinate to the ministry are attempting to treat their industrial waste before it is discharged into the Nile by subjecting it to initial treatment on the combined Helwan network. The report went on to acknowledge that 13 companies and factories operating in different areas have performed studies on the treatment of their discharged waste, but are still waiting for adequate financing to implement them.

1,000 Toxic Substances

Regarding the industrial wastes discharged into the Nile, Dr. al-Husayni Fayid, a professor of water studies at the National Research Center, states that the Nile pollution problem has been a concern of the National Research Center since the midfifties. In 1981, the center submitted a report on this problem, which was discussed in the People's Assembly health committee, but did lead to any results. It is most strange that Law No. 48 of 1982 is applied only to the ingenuous. The government must become concerned with this problem before it causes a true disaster.

He emphasizes: As long as any industry discharges dangerous waste into the Nile, everything that we think and everything that is said about the treatment units installed in factories does not mean that they purify their discharge completely, because the efficiency of these units is limited. It is necessary to select new technology to purify industrial waste before it is discharged into the Nile. To date, it has been established that there are over 1,000 toxic chemical substances that are discharged into the Nile, including all types of heavy metal elements, which cause fatal illnesses. This calamity stems from the lameness of Law No. 48 of 1982, which is strict regarding cases of percentages and standards on the one hand. However, regarding the averages and percentages which it has established for toxic materials that are permitted to be discharged into the Nile, it has a clear shortcoming. This law was established in the absence of research. It must be changed immediately to correspond to the new circumstances. These problems must not be subject to political decisions.

He states: The rate of pollution of the Nile increases as you move northward, inasmuch as the number of factories that discharge toxic wastes containing arsenic, iron, lead, and other damaging elements, increases. Many substances discharged into the Nile are unknown, which makes it impossible to establish a connection between pollution and the incidence of diseases, because studies in this regard are completely lacking. Our call for a law that protects the Nile has passed unnoticed.

Chemist 'Abdallah Qa'ud, the general director of chemical and biological research at the Sewerage Authority, states: Industrial waste includes acids, alkaline material, and a high percentage of suspended and organic material.

He emphasizes that more than 75 percent of the factories discharge their waste into the Nile rather than the sewage system. Consequently, pursuant to Law No. 93 of 1962, it is required to attach a treatment unit to each factory and to subject these units' drains to sampling by the Health Ministry and the Sewerage Authority, as well as analyses to determine compliance with the standards for permitted discharge into the Nile. In addition, the construction of any factory near the Nile should be prohibited.

List of Dangerous Diseases

Regarding the diseases caused by industrial discharge, Dr. Mahmud 'Amr, a professor of industrial and internal medicine, and the director of the Poison Center at Cairo University, states: Factory waste discharged into the Nile includes chemicals, dyes, pesticides, heavy elements, and other industrial byproducts. All of these materials are highly toxic to all living organisms. Human beings are the most affected, and the most directly affected organs are the liver and the kidneys.

The only way to become rid of these byproducts is to map all the factories on the Nile River, especially iron, steel, and textile factories, and establish highly efficient treatment plants in them to purify the waste before it is discharged into the Nile. Also, all factories and other companies should be relocated in stages, according to a carefully prepared plan, to sites far from the Nile. No new factories or companies should be built near the river, regardless of their purification units, because their waste will never be purified sufficiently, regardless of the purification stages to which it is subjected.

[6 Mar 91 p 3]

[Text] The violations that have been committed against the Nile are beyond imagination. The violations and cessation decrees that were written out up until 1990 pursuant to Law No. 12 of 1984 for Irrigation and Drainage total 148,089 violations, of which only 33,564 have been redressed. The number of violations and cessation decrees issued to the private and public sectors between 1982 and 1990 pursuant to Law No. 48 of 1982 totaled 18,889 violations. Thus, there were 166,968 violations of these two laws together within only a seven-year period, in addition to 14,070 violations of buildings located on the Nile and water channels.

The Nile has thus become a public domain for encroachment and pollution, without the minimum of protection, as clarified in this report.

Eng. Mukhtar 'Imarah, the deputy minister of public works for the maintenance of water channels and the protection of the Nile, opened the Nile pollution folder on his desk, first addressing the problem of agricultural drainage water: There are no less than 75 drainage canals, most of which are in Upper Egypt, which discharge more than 3 billion cu m of agricultural drainage water annually into the Nile, in addition to the drainage canals in Lower Egypt. This drainage increases the

percentage of salts in the Nile. Then, there is the problem of sewage. It has been observed that all of the governorates through which the Nile passes, from Aswan to Damietta, discharge most of their sewage into the Nile directly. Because treatment units, though large, have limited efficiency, they discharge polluted water containing damaging material and elements. The ministry sent letters to the governorates requesting that they treat the problem. Some have complied while others lack financing. There is a subcommittee subordinate to the Pollution Fund for Law No. 48 of 1982, which examines the situations of installations and sewage plants built on the Nile and water channels and the compliance of these installations and plants with the requirement to erect treatment units. Violation reports and cessation decrees are written out against any party not in compliance. They are then sent to the security directors of the governorates for implementation. However, unfortunately, only a few are implemented. Also, the irrigation administrations and control boards in the governorates inspect pollution sources to enforce the law with respect to violators. They also have the authority to inspect the shores of the Nile and water channels and to write out reports and violations against any party that discharges garbage, dead animals or birds, or any hard material into water channels.

In my opinion, states Eng. Mukhtar 'Imarah, these reports are inadequate to prevent the violations against the water of the Nile. This matter requires the organization of an extensive media campaign to raise the awareness of citizens to avoid this behavior, which has unfortunately increased along the Nile bank promenades in Cairo and al-Jizah, despite the residents' high living standard.

Eng. Mukhtar 'Imarah moves onto another problem, namely that thousands of boats and riverine units operating in transportation and tourism discharge engine grease and byproducts and human waste directly into the Nile, which increases the rate of pollution. It is impossible to treat this grease, which contains heavy elements injurious to health, or separate it from drinking water.

Pollution, Due to Grasses

Eng. Mukhtar 'Imarah then deals with the problem of grasses in general. He divides them into three types. The first is the floating type, such as nelumbo [Nile lily]. These plants spread quickly. Within a year, a seedling can produce 20,000 seedlings, which cover a full feddan of water. If they are not countered, they could cover the entire Nile within three years. The effect of that would be to: prevent water from reaching [agricultural] lands; transform the Nile River and water channels into marshes and pools that support abundant insect pests, parasites, parasitic fungi, bilharzia, and other diseases; impede navigation, irrigation, and drainage; and increase the underground water level and the salinity of the soil.

The second type of grass is submerged grass, such as "abuzalaf" and horse's tail which grow in shallow, medium-sized irrigation canals throughout the spring and summer. These grasses grow in about 33,000 km of medium-sized irrigation canals and 13,000 km of drainage ditches.

The third type includes canes, reeds, and papyrus, which grow on the banks of the Nile and in its resources. These three types of grasses pollute the Nile, which in turn results in the spread of diseases harmful to humans and animal life.

Regarding the Health Ministry's role in countering the pollution of the Nile, he emphasizes that the ministry is taking samples from pollution sources, analyzing them, and sending the results to the Public Works Ministry, which ascertains whether water being discharged into the Nile exceeds the percentages and standards stipulated by the law, so that the necessary measures can be taken against violators.

Regarding pollution stemming from sewage, chemist 'Abdallah Qa'ud, the general director of chemical and biological research in the General Sewerage Authority, states that the sewage networks receive waste from sewage and industrial discharges in accordance with the percentages and standards determined by the law. Sewage differs from industrial waste, because the latter includes hard, damaging, and lethal material, which corrodes the sewage networks and facilities and blocks the networks with organic and toxic material, which settles in the networks and treatment plants. The rest is discharged into the drainage canals and enters the Nile carrying harmful elements. The danger posed by sewage to the Nile is that it contains a very high percentage of concentrated toxic and harmful elements and is frequently mixed with industrial waste and heavy metals. These concentrated elements destroy fish resources, harm plant and animal life, and threaten human beings, because they include cyanide, mercury, lead, silver, cadmium, copper, and zinc. These substances, whose toxic effects differ, also cause highly injurious diseases.

Chemist 'Abdallah Qa'ud states that agricultural runoff poses a great danger if it flows directly into the Nile, because it contains pesticides and chemical toxins that are sprayed on plants. The most dangerous of these pesticides are phosphorous elements and chlorinated [maklurah] material. Another source of pollution of no less importance is garbage that is thrown into the Nile. Also, dead animals, which are filled with bacteria, are thrown into the water, where they dissolve, consuming oxygen in the water and transforming it into septic, polluted water, which adversely affects human, animal, and plant life. The solution is the strict enforcement of Law No. 48 of 1982 Regarding the Protection of the Nile and Water Channels From Pollution.

The Law To Protect the Nile

Dr. Sami al-Husayni Fayiz, a professor of water pollution research at the National Research Center, emphasizes that the Nile River has become a receptacle for the discharge of different pollutants, from the passage of the inundation south of Aswan, which collects all of the waste of factories and hospitals and garbage and discharges them into the Nile, to the Damietta and Rashid branches. Along the length of this extension, all types of sewage and agricultural and industrial waste are discharged into the Nile, along with polluting garbage swept off the banks by the rain into the water. In 1982, we alerted the Irrigation Ministry to the danger posed by pollution to the Nile River. We warned against the use of chemical herbicides to combat water grasses, because these herbicides pollute the water and increase the rate of toxins in it, which threatens fish and livestock resources and damages human health. Despite the pollution and the problems caused by water grasses, such as the Nile lily and submerged grasses, these grasses are extremely beneficial, because they absorb dangerous pollutants, such as heavy metals and dangerous chemicals discharged by factories into the water. Initial studies have shown that they absorb chemical pesticides and store them in their roots, so that they have earned the nickname "pollutant fisher." Combatting these grasses with chemical herbicides will lead to the breakdown of the grasses' roots and the release of heavy metals and damaging chemicals, which will settle on the river bottom and increase the toxicity of the water.

Therefore, according to Dr. Sami, it is a major mistake to combat grasses by spraying them with chemical herbicides. It is preferable to combat them by mechanical means that uproot them, including the toxins in them, from the water and cast them onto the banks to dry out completely.

The Nile lily problem could also be solved by discovering the pollutants on which it subsists, and preventing the discharge into the Nile of the pollutant that provides the Nile lily with phosphorous and nitrogen, which helps it to spread.

He emphasizes that sewage and industrial waste purification and treatment plants are not useful and of limited efficiency in separating out toxic elements. Consequently, human and industrial waste flows into the Nile with most of its pollutants. Thus, the government should import modern technology to purify waste water before it is discharged into the Nile, so that the percentages of elements and components contained in the implementing regulation of Law No. 48 of 1982 are not exceeded.

Dr. Sami adds: As long as the current methods for combating pollution are not able to purify the water of the Nile, it is dangerous to discharge any used water into the Nile, such as industrial and agricultural waste and sewage. It is necessary to examine the best [course of action] in this regard. Years ago, the Environmental

Affairs Agency undertook several modest efforts regarding pollution studies. However, we do not know why these efforts ceased. For our part, the National Research Center is drafting studies to determine the pollution of the Nile and methods of treating it. However, the state is not providing the necessary financing to finish these studies, which forces us to stop in the middle of them, despite the danger posed by pollution, both known and unknown, to the Nile. The solution is to put into effect a special law to protect the Nile and to evaluate the percentages and standards to be applied to discharges made into the Nile. This process must occur.

Damaging Pollutants

Dr. Mahmud 'Amr, a professor of industrial medicine and internal diseases, and the director of the Poison Center at Cairo University, warns of the danger of the discharge of sewage and agricultural waste into the Nile. He states: This waste includes chemical, organic, and live and dead bacteriologic material, pesticides sprayed on crops, industrial cleaners used in homes, oils, dyes, and human waste containing all types of bacteria.

Scientific studies analyzing ground water samples in Egypt show it to contain a high percentages of sewage. The direct use of this untreated water to irrigate agricultural projects transfers toxic elements directly to plants, which in turn transfer them to human beings and animals. Also, pesticides sprayed on these plants enter the Nile after spray irrigation.

Regarding the damage, Dr. 'Amr states: Some chemical materials persist and do not break down. They become mixed with other material, transforming into more toxic material injurious to humans, animals, and plants. They have a more dangerous effect on children, because the cells of children are more active. They affect cells of the brain, liver, and kidneys. Organic pollutants in the Nile cause bacteriological diseases, given that water purification plants are inefficient. It is well-known scientifically that no organ in the body can resist the more than 5,000 chemical substances in the Nile that have a toxic effect on human beings. People are now afflicted by dangerous, chronic diseases, such as pneumonia, skin sensitivity, digestive system diseases, and kidney failure. The incidence of nervous disorders is also high.

[8 Mar p 3]

[Excerpt] It is certain that the laws that have been promulgated to protect the Nile ensure that anyone who violates its preserve will be struck by an iron fist, whether for violating its flats [masattatih] by building dwellings, factories, or other installations, or by polluting its water in any way. There is no doubt that these laws, if enforced, will restore the river's purity and beauty. However, why is the government a worse offender than the people when it comes to committing violations against the river's flats or water? The government has helped, with an enviable effort, to pollute the river by discharging the waste of governmental factories into the

Nile directly and regarding it as a drainage ditch for sewage and agricultural runoff carrying chemicals and toxic pesticides. The governorates on the Nile, the Tourism Ministry, and the Agriculture Ministry have each hastened to grant permits for the establishment of facilities on the Nile's banks and in the middle of it, and to rent alluvial land to individual tenants. The river has thus begun to be strangled and its banks have almost become joined in several areas. The Public Works Ministry is encumbered by judicial rulings issued in favor of these individuals. This conflict between jurisdictions makes it difficult to eliminate these violations, when the law is clear in this regard.

This reality makes protecting the Nile from violations extremely difficult. The river is filled with islands, residential buildings, tourist clubs and casinos, factories, and dwellings on both of its banks, both licensed and unlicensed. Their owners regard them as accomplished facts, and the law is unable to redress these violations, despite the recommendations of planning experts regarding the need to remedy these violations and replan the river's preserve [haram]. According to official statistics, 181,000 violations concerning encroachment and pollution were committed against the Nile since laws protecting it were promulgated. Of this number, 15,384 pertain to buildings in 1989, which dropped to 14,070 in 1990, because the Public Works Ministry was able to implement several cessation decrees. However, the rest of the violations stand as evidence of the extent of the encroachments on and violations against the Nile by the people and the government. How were these violations committed and how can they be remedied?

The State Violates the Nile

Eng. Mukhtar 'Imarah, the deputy minister of public works for the maintenance of water channels and the protection of the Nile, reads the Nile file on threats posed to the great river. Its last pages deal with violations against the river in detail. He stated: First, we should know that the Nile River, including the Damietta and Rashid branches, is about 1,500 km long. Its width ranges between 500 and 800 meters, and its depth between 4 to 20 meters deep. These flats, i.e., properties on the Nile River set aside for public use, "the river's preserve and alluvial land," are subject to Law No. 12 of 1984 for Irrigation and Drainage. The properties located on Nile are divided into three types:

The first type: public service facilities under the control of the Public Works and Water Resources Ministry.

The second type: alluvial lands owned by the Agricultural Reform Authority.

These properties, according to Eng. Mukhtar 'Imarah, are state property. No building or installation can be built on them without the permission of the Public Works Ministry, whether the building is built by the government, an individual, or the private sector. If one

of these parties encroaches on these areas, a violation report is written out against it and the cessation of the violation is decreed.

Unfortunately, the Nile preserve has become an arena in which public and private parties fight to use its flats in an entirely unlawful manner, due to their natural enticements. This has reached the point where governorates located on the Nile committed several infractions by constructing buildings and public and private facilities, giving themselves the right to grant the necessary building permits to do so without consulting with the Public Works Ministry, in violation of the law. This compelled the ministry to contact the governors to stop this violation. Recently, a conflict arose over the river's alluvial lands. The Agricultural Reform [Authority] rents them to tenants under Law No. 100 Regarding Agricultural Reform, even though Article 7 of Law No. 12 of 1984 for Irrigation and Drainage prohibits the establishment of any work or the planting of any trees on state-owned land located between the river's two banks. This contradiction leads us to the problem of inter-agency jurisdictional conflicts: The ministry writes out reports and cessation decrees regarding violations pertaining to the river's alluvial land, which is countered by the tenant's submission of documents notifying of his right to use this land, such as a "rental agreement" concluded between him and the Agricultural Reform [Authority]. Consequently, a problem arises between the Public Works Ministry and the tenants, who then resort to the judiciary to suspend the cessation decrees, while the ministry is only bound to the decision of the administrative judiciary, since the rule is that the ministry is exclusively responsible for all of the flats of the Nile.

The deputy minister adds: The Public Works Ministry is entitled to cancel any permit and to remove any works which have been carried out on state lands between the river's banks without a permit, regardless of the existence of any permit issued by another agency. Regarding buildings and facilities currently located on the Nile's shore, such as factories, clubs, casinos, floats [?—'a'imat], and other buildings, some, such as the clubs, have obtained permits from the ministry. An examination is being made of the possibility of granting permits to others, such as the casinos, most of which were built long ago, such as the tourism casinos, which have obtained permits from numerous agencies, such as the Tourism Ministry or the governorate in whose jurisdiction they lie. However, their situations are being examined in the light of Law No. 12 of 1984 and the ministry's instructions in this regard, after a conflict arose over which agency has the authority to grant permits to these facilities.

A third type of property in the Nile preserve, according to Eng. Mukhtar 'Imarah, is property owned by the inhabitants on the Nile flats. It is circumscribed by restrictions pursuant to Article 5 of Law No. 12 of 1984, which prohibits the undertaking of any works on these lands without permission from the Public Works and

Water Resources Ministry, stating that a violation and a cessation decree will be written out against violators of this stipulation.

He emphasizes that the ministry easily corrects violations on privately owned property, but encounters great difficulty regarding government-owned facilities and factories. The ministry is responsible for the entire river preserve, including the area that extends 30 meters out from its eastern and western banks. These areas are unfortunately disputed by numerous agencies, both state and private, which build on them from Aswan to Alexandria and Damietta, flagrantly encroaching on the river's preserve, either by usurping areas of it or polluting it through the discharge of sewage and industrial waste.

Dr. Mustafa al-Hafnawi, a former housing minister, believes that the state, more than the population, has encroached on the Nile preserve and has usurped large tracts of its flats. He states: For many years, the state has permitted the construction of factories and different facilities along the Nile River without deference to any appreciable planning that would require these facilities to be far from the river preserve and incorporate specifications that prevent the pollution of the Nile and the deformation of its courses. These facilities then discharge industrial and human waste directly into the water. Even sewage treatment plants have been built near the river, and they discharge into it. Also, some residents have committed violations by randomly building large concrete block buildings that block the pretty view of the Nile, without consulting with pertinent state agencies.

He emphasizes: These buildings have been built without any permit and without complete facilities. Who permitted them? Who is responsible for correcting these violations?

Regarding the protection of the Nile preserve against encroachment, Dr. Tahir al-Sadiq, a professor and assistant dean at the College of Regional and Urban Planning at Cairo University states: Any buildings on the banks of the entire Nile, even buildings constructed for religious purposes, must be absolutely prohibited. The broad flats along the banks should be designated for amusement and recreation. Then, the promenade areas in each city through which the Nile passes should be beautified and provided with services for strollers and tourists, provided these services are established in areas far from these flats, and that buildings built on the river promenade not exceed a certain height, pursuant to the laws.

The Cessation of Encroachment and the Protection of the Nile

The chairman of the Consulting Engineers Federation, Engineer Husayn Sabur, places responsibility for not stopping illegal encroachments on the Nile River on local government agencies. He regrets that a large percentage of the violations are committed by governmental

public-sector companies, which have built many factories in the Nile preserve. He states: Comprehensive plans were not drafted for the cities of the republic before the expansion of economic activity which the country has recently witnessed. The result is that many of these activities have been established on lands that were not allocated for such activities, such as on the Nile flats. This randomness is not receiving adequate seriousness. The state has been virtually absent for long periods, either due to the power of the position of one who builds on the Nile's shore, or because the state itself is the violator. From a planning standpoint, any factory should be built in areas that have an energy and water infrastructure and are connected to public sewers, and that factory should be equipped with a treatment unit from the outset to preclude the discharge of harmful waste into the water, which endangers human health and ruins fish resources and agricultural lands.

Eng. Muhammad Hasan Durrah, a former chairman of the housing committee in the People's Assembly, emphasizes that the initial error was that the state built large factories without treatment stations at Aswan, Naja' Hammadi, the Shubra al-Khaymah area, Hulwan, Mustard, and along the length of the Nile River. The population followed its example, building numerous buildings and dwellings on any land it could find around the river. Still worse are those high towers on the shore of the Nile in Cairo and al-Jizah, which are 70 meters high. These towers violate building laws, which stipulate a building height restriction of 33 meters, to prevent any marring of the Nile's beauty within the sight of officials. This requires replanning the area of the river's shores, adhering to specified heights and distances, prohibiting the construction of any public facilities near the Nile, and the elimination of any encroachment on its flats. [passage omitted]

INDIA

Proposal To Reprocess Other Nations' Spent Nuclear Fuel

BK0506100091 Delhi THE HINDUSTAN TIMES
in English 16 May 91 p 17

[Text] New Delhi, May 15 (PTI) [PRESS TRUST OF INDIA]—In a bid to earn foreign exchange, India's Atomic Energy Commission (AEC) has offered to reprocess spent fuel from nuclear reactors of other countries as a commercial service.

AEC Chairman Dr. P.K. Iyengar has informed the International Atomic Energy Agency (IAEA) in Vienna about AEC's readiness to carry out fuel reprocessing work for countries that require such services.

This major policy decision would mean that nations which have been accumulating spent fuel could ship this material to India and have the plutonium separated. Plutonium is a valuable nuclear fuel and can also be used in a bomb.

Dr. Iyengar has, however, made it clear that the Indian offer is for spent fuel from research reactors of countries that agree to take back the wastes after reprocessing.

AEC's decision to reprocess other countries' spent fuel is not expected to pose any risk to India's environment as the nuclear wastes would be shipped back to the country of origin.

According to Dr. Iyengar, there are about 125 research reactors in the world whose spent fuel could be available for reprocessing.

Germany, Italy, Japan, Spain and India are the only non-nuclear weapon states that have fuel reprocessing facilities.

India's first fuel reprocessing plant was commissioned at Trombay in 1964. A bigger plant has been built at Tarapur and a third plant is nearing completion at Kalpakkam near Madras.

Reprocessing foreign fuel is just one aspect of AEC's aggressive strategy to capture a share of the international nuclear market hitherto monopolised by the West.

It is, however, not clear whether or not India's offer to separate plutonium from spent fuel would lead to proliferation, considering that the plutonium for India's nuclear test in Pokran in 1974 came from reprocessing the spent fuel from one of India's own research reactors.

The AEC has, however, allayed such fears on the ground that IAEA safeguards would apply to countries that take advantage of India's reprocessing offer.

IRAN

Tehran Official Details Auto Emissions Policy

91WN0472B Tehran JOMHURI-YE ESLAMI
in Persian 26 Mar 91 p 3

[Text] News Department—With the adoption of new regulations by the Tehran Traffic Administration Office, next year autos with unsafe emissions will be dealt with harshly.

General Fathollah Heydari, chief of the Tehran Traffic Administration Office, who announced the above in an exclusive interview with our correspondent, emphasized that the Tehran Traffic Administration Office does what it says it will do. He warned those government vehicles with unsafe emissions to correct their deficiencies as soon as possible, for otherwise they will be dealt with harshly.

He added: It was recently decided in the Province Procurement Council to take vehicles of this type off the road.

General Heydari then discussed the emissions in the Vahed Company buses. The only task of these buses is to serve the people, and in view of the shortage of buses in

the city, if we take them off the road we will disrupt transportation services to the people. We therefore ask those responsible in this matter to establish a metro line [subway trains] and also to put new buses on the road as soon as possible.

He emphasized that one of the important factors in alleviating air pollution is to reduce the number of vehicles and to eliminate the heavy traffic in the city, and he expressed the hope that when the metro starts working, the new buses that have recently been purchased by the Vahed Company are put into service, the new Peugeots are put into service by the taxi system, and vehicles are converted to burn gas [rather than gasoline], then the problem of air pollution will be eliminated as quickly as possible.

The chief of the Tehran Traffic Administration Office described as very useful the creation of a special bus lane on Vali 'Asr Street in Tehrane, which is one of the projects approved by the Supreme Traffic Council, and he emphasized its spread throughout the city.

He then said that the motivation for creating lines like this is solely to get the people make more use of public transportation and to avoid the use of private automobiles. He said: When these lines are created, the people will be able for example to go from Tajrish Square to the southernmost point in the city for only ten to 20 rials.

In conclusion, General Heydari announced: Based on the latest measure approved by the Supreme Traffic Council, the special lane on Vali 'Asr Street was built to go from Vali 'Asr Square to Rah Ahan [Railroad] Square, and its extension going to Martyr Chamran Boulevard is being studied.

Report on Karaj, Larian Water Reservoirs

[JN0506084891 Tehran JOMHURI-YE ESLAMI
in Persian 26 Mar 91 p 3]

[Text] Despite significant rainfall in the last two or three weeks and in the last two days, the water levels at the Karaj and Larian dams are low.

Engineer Tafazzoli, executive director of the Tehran Regional Water Agency, gave a telephone interview to our correspondent. While announcing the above, he said that the rainfall levels have been significant.

He said: Rainfall in the last few days has created desirable conditions for the Tehran Regional Water Agency, and it has eased the water crisis, but we hope the people will avoid excessive water consumption.

He expressed optimism that if rainfall this month and in the month of Ordibehesht [21 April - 21 May] continues at this rate, there will be uninterrupted consumer water service to city residents.

The executive director of the Tehran Regional Water Agency said: City residents think the reservoirs fill up every time it rains and that there will be no more

problems, although this is not at all true. Although rainfall levels are significant, the water levels at the Karaj and Larian dams are still low.

He announced: Currently the water level at Karaj dam is 11 meters lower than it was last year. Likewise, the water level at the Larian dam is six meters lower than it was last year.

Engineer Tafazzoli said: Despite the recent rainfall, there are only 68.29 million cubic meters of water in the Karaj reservoir, and this is 22.5 percent less than the figure for last year. There was 87.78 million cubic meters of water in the Karaj reservoir last year.

Likewise, there are 1,586.20 million cubic meters of water in the Larian reservoir, and this is 25 percent less than the figure for the same time last year. There was 1,592.61 million cubic meters of water reported in the Larian reservoir last year.

It is necessary to mention that the above statistics and figures are estimated reservoir and rainfall levels as of 4 Farvardin [24 March].

JORDAN

Government Closes Factories Polluting al-Zarqa' River

[JN0506084891 Amman JORDAN TIMES in English
5 Jun 91 p 3]

["Special to JORDAN TIMES" by Khalil 'Abd-al-Salam]

[Text] Amman—In keeping with its warnings to factories violating health safety regulations, the government Tuesday announced the closure of 21 factories in the al-Zarqa' Governorate and said they were found to have violated health safety regulations, causing damage to public health and the environment.

The closure came only four days after the start of a campaign, by the al-Zarqa' Public Health Committee, to discover factories and companies which violate rules and regulations concerning public health.

A committee spokesman said Monday that a certain percentage of water flowing out from factories and companies located within the al-Zarqa' River basin and into the al-Zarqa' River that feeds the King Talal Dam, contained bacterial and chemical pollutants.

He said that many of the 36 factories and companies located within the basin did not comply with the regulations and ignored directives by Prime Minister Mudar Badran to install equipment for the treatment of waste water.

The order for the closure was issued by Minister of Municipal and Rural Affairs and the Environment and Acting Health Minister Muhammad 'Abdub al-Zabn.

Following are the companies and factories ordered closed: the Industrial, Commercial, and Agricultural Company, the United Factories Company in al-Zarqa', the Blankets Company, the Jordan Yeast Company, the Jordan Pulverisation and Intermediate Petro-Chemicals Industries, the Jordan Paper and Cardboard Factories Company, the Jordan Industrial and Match Company, the al-Husayn Iron and Steel Factories, the Jordan Chemical Industries Company, the Arab Food Company, the Paints Factory, the Intermediate Petro-Chemicals Industries Company, the Jordan Sulphochemicals Company, the Arab Iron and Steel Industries Company, the Jordan Pipes Manufacturing Company, the al-Dhulayl Poultry Marketing Company, the Fine Hygienic Paper Company, the al-Dhulayl Dairy Products Factory, Zaydan Ice Cream Factory, the Jordan Tanning Company and al-Nisr Distilleries Factory.

The government had earlier given one month to these companies to install proper equipment for the treatment of waste water so as to reduce the contamination in the river water flowing towards the King Talal Dam which eventually reaches the farmlands of the Jordan Valley region.

Prime Minister Mudar Badran had warned that violators of the law and health safety regulations risk having their factories closed down.

In the meantime, the committee was reported pursuing its campaigns to ensure that factories abide by the regulations. The committee Chairman Ghalib Izmiqna said samples of waste water flowing out of the factories were being tested constantly and the committee submits regular reports about its findings.

Commenting on the closure order, Minister of Water and Irrigation Sa'id Hayil Surur said that a general survey was conducted by the committee, which comprises representatives of the ministries of water and irrigation, agriculture, industry and trade and other organisations, to monitor the water in the river.

The order for the closure was taken after the government had received a detailed report about the situation. The owners of closed factories had earlier been warned that they risk facing such situation unless they installed safety equipment, Surur added.

The contaminated water of the King Talal Dam was alleged to be responsible for the severe damages to the Jordan Valley crops in the past winter season.

Minister Konovalov on National Nuclear Power Agenda

PM0406134591 Moscow PRAVDA in Russian
25 May 91 Second Edition p 4

[Article under the "Looking to the Future" rubric by V. Konovalov, USSR minister of nuclear power and industry: "Uranium, Nuclear Power Stations, and Safety"]

[Text] In our country today there are 15 nuclear power stations with 46 power units generating 211.5 billion kilowatt-hours of electricity in 1990 or 12.5 percent of the country's total electricity generation. Around 70 percent of it is produced at thermal electric power stations, which burn coal, oil, and gas, and around 18 percent is produced at hydroelectric stations.

Analyzing the potential for the development of the USSR power industry in the near future, it should be said that the European part of the country can hardly expect a substantial increase in energy production at coal-fired thermal power stations [TES]. Even now the average distance that fuel is transported from the eastern regions to the center and the Urals is around 4,000 km, and fuel transport forms 40 percent of the total freight turnover. In addition, the ecologically harmful effect of coal-fired TES's and the high capital investments needed to reduce it to an acceptable level in densely populated regions of the European USSR place coal-fired TES's in an uncompetitive position in that region.

The forecast is that oil extraction costs will rise 50-80 percent by the year 2000 and 100-150 percent by 2010, so that in the next few years the use of petroleum products as a boiler fuel will also become economically unjustified.

Of course, the existence of major natural gas deposits puts the Soviet Union in a unique position with regard to the industrially developed countries of the world. Clearly, in the next 30-40 years only electric power stations and boilers using natural gas can be viewed as a realistic alternative to AES's [nuclear electric power stations] and TES's in the European part of the country.

Even in that event, however, it should be borne in mind that the average gas pumping distance has risen from 530 km in 1956-1960 to 2,400 km now, and the trend toward increasing transport distances is continuing. Thus, from the viewpoint of the economy, the priority development of the nuclear electric power industry in the European USSR seems justified.

The development of the fuel and energy complex must proceed not only from economic but also ecological requirements and must be socially acceptable to the regions where the energy sources are located and to society as a whole. Emissions (discharges) of pollutants during the operation of a TES are so significant that they have consequences which are familiar not only locally and regionally but also globally. One such consequence is

the change in the earth's thermal balance through discharges of carbon dioxide and dust.

The nuclear power industry, however, is free of a number of the shortcomings characteristic of organic fuel. Thus, there are both economic and ecological reasons for using and further developing nuclear power, especially in the European part of the country.

As is well known, by the late sixties the USSR had already carried out an extensive scientific program to find what were for it the best types of power-industry reactors capable of ensuring the generation of electricity on a large industrial scale. Two types of reactors formed the basis of the Soviet nuclear power industry. One is the pressurized water reactor [PWR]—the most widespread in the world today—which was first used by the nuclear powers in submarines. The other is the water-cooled, graphite-moderated reactor, which is undoubtedly akin to industrial reactors used in a number of countries to produce plutonium.

In this connection, the Soviet Union's energy program announced in the early eighties envisaged a rapid increase in the nuclear power industry's capacities and the fundamental expansion of the sphere of its use through its introduction in industrial and domestic heat supply, the vigorous development of fast-breeder reactors, the creation of low-capacity nuclear power installations for remote and isolated regions, and also the development of civilian atomic ship building.

On the basis of this program the modernization and creation of new industrial capacities began in the country. By the mid-eighties a developed nuclear power and industry infrastructure had been formed. The result was the commissioning of 17 power units with a total capacity of 15,800 megawatts between 1981 and 1985. In that period the world's largest power unit with a capacity of 1,500 megawatts using a high-power pressure-tube [RBMK] reactor was developed and commissioned in the Soviet Union. Work also began to build the first power units at nuclear heat-supply stations.

The Chernobyl accident made substantial changes to the USSR's nuclear power program. Keen opposition developed rapidly within society not only to the further development of the nuclear power industry but also to the operation of existing AES's.

The first result of this approach was a sharp reduction in the targets for the commissioning of new capacities. Recently work has been halted at various stages of construction and planning at nuclear power station sites with a total capacity of over 100,000 megawatts. The Armenian AES was taken out of service soon after the earthquake there.

It should be noted, however, that in a number of parts of the country recently there has been a tendency to understand the need for a nuclear power industry primarily among people who influence decisionmaking, including deputies. This gives grounds for thinking that a sober

approach is prevailing. As an example one can cite the decisions of the Voronezh, Kursk, Murmansk, Chelyabinsk, Semipalatinsk, and East Kazakhstan oblast soviets on the construction of new power units with a total capacity of over 12,000 megawatts.

The changes taking place in the country have undoubtedly altered the energy program. Realistically 7,000 megawatts of installed capacity could be commissioned between 1991-1995 and 12,600 megawatts in the following 5-year period.

If that happens, the country's total AES capacity will be 57,000 megawatts by 2000, excluding AES decommissioning. In the stage after 2000 it is forecast that there will be an increase in the rate of AES construction so as to achieve an increase in installed capacity to 100,000-150,000 megawatts by the year 2010, including the decommissioning of units which have reached the end of their service life. The final decisions have still not been adopted. They will be reflected in the national power program in the light of the need to increase the reserve capacities in the country's power system and to replace worn-out power units and in view of structural changes taking place in the national economy.

AES construction in the current decade is based largely on the use of VVER-1000 [light water reactor] power units. The design safety characteristics of this power unit have been improved and are a match for the best foreign models. Solutions contained in the aforementioned draft are being introduced as much as possible in AES's already in operation.

After the year 2000, AES construction is to be carried out using new-generation increased-safety series-produced power unit designs based on continuity and accumulated positive experience gained throughout the period of nuclear power industry development.

The USSR nuclear industry currently has substantial reserves. This makes it possible to modernize a number of production units in the nuclear fuel cycle and switch to new technologies which ensure the best environmental protection and the more comprehensive use of uranium ores. The existing technology makes it possible for hydrometallurgical plants to extract such by-products as molybdenum, rhenium, scandium, vanadium, gold, and rare-earth and other valuable elements.

The progressive method of underground leaching is being introduced in the extraction of uranium. It makes it possible to work reserves of poor-quality uranium ores lying depths and in complex mining and geological conditions. It is planned to increase uranium extraction by this method to 40-50 percent by 1995. Given the possibility of utilizing existing stocks of uranium ore the sector's raw material potential currently makes it possible to meet the needs of AES's with a total capacity of around 100,000 megawatts including production capacities using uranium isotope fission.

The second stage of the development of the nuclear power industry in the USSR (beginning of the 21st century) is linked to the creation of a new generation of nuclear reactors and stations, which are a logical continuation of the country's reactor building, in which full account is taken of recent scientific and technical achievements and technical means of "accident management" are used.

New safety principles have already been incorporated in the design of nuclear heat-supply [AST] power stations using AST-500 reactors, which has made it possible to locate them in the immediate vicinity of the cities of Nizhny Novgorod and Voronezh. An IAEA expert commission which examined the AST design for Nizhny Novgorod and the state of construction and assembly work confirmed the high level of safety of the AST-500 and the innovative nature and soundness of the technical solutions used.

Another important aspect ensuring the implementation of stage two of the nuclear power industry's development is the solution of the problem of radioactive waste management. In terms of volume the bulk of the waste is of low- and medium-level activeness. Nevertheless, there are no fundamental problems, either technological or economic, with these types of waste.

In the USSR, as in other countries, processes have been developed and created for reducing the volume of waste by the evaporation, compression, and incineration of various types of waste and solidification (cementation or bituminization). The technique that has been developed for burying such waste products in insulated shallow and deep storage tanks, which ensure that the ecosystem is shielded from radioactivity.

When treating high-activity radioactive waste one has to deal with radionuclides whose half-life is measured in tens of thousands of years or more. Fractionating methods are being developed in the USSR making it possible to separate such radionuclides from the bulk of the fission products. This makes it possible not only to use many of the isotopes contained in highly active waste products in the national economy but also to create the corresponding storage facilities for each of the fractions obtained.

The ministry has prepared a draft state program for the management of radioactive waste for 1991-1995 and for the long-term to 2005. The draft will be presented to the government in the near future.

Nuclear power stations must operate until the end of the design service life of the power units' main equipment while fulfilling essential measures which increase the level of safety and with regular monitoring of that level. Reactors or stations must not simply be taken out of service or shut down but modernized so as to subsequently use the entire existing infrastructure.

Today's AES's were designed without a clearly planned technique for dismantling them. Consequently, the

USSR is now working to find ways to resolve this problem. To ease the urgency of the problem and cut the number of AES units being taken out of service a package of work is being carried out to extend the service life of their main equipment. For example, there has been successful work on burning off [otzhig] a PWR reactor shell.

Efficient international cooperation is of exceptional importance in this regard. The collective method of resolving major projects and problems has already been tried successfully in the world. An example is the IAEA [International Atomic Energy Authority], an important and prestigious organization which actively promotes the development of scientific research in various spheres of science and technology and resolves political problems with the aim of utilizing the energy of the atom for peaceful purposes alone.

Soviet specialists are working actively on virtually all the international cooperation programs. In conjunction with Finnish and Swedish specialists, for example, we are monitoring the pollution of the Baltic. We are directly involved in the current discussion of questions and problems of reclaiming territories polluted through nuclear activity in past years and as a result of such accidents as those at Chernobyl and Kyshtym.

Thanks to the Japan Atomic Industrial Forum, there has been fruitful cooperation for many years now with Japanese scientific and industrial organizations in the sphere of power industry reactors and nuclear power station safety and bilateral seminars have been held on problems of increasing the service life and reliability of fuel and construction materials in power industry reactors and the processing of radioactive waste products. We are hoping to expand and deepen our bilateral cooperation with Japan including in the economic sphere. There is good scope for that because international cooperation and production-sharing are an effective method of mastering modern technologies and resolving tasks which a single state would find difficult to finance unaided.

Services in the nuclear fuel cycle are an important element in our participation in international collaboration and cooperation. Until recently the only services that we provided in this area were in uranium enrichment and the production of fuel for nuclear power stations built with Soviet assistance. Recently our country entered the world market offering to sell natural and enriched uranium. Given the capacity of our production units we are interested in a significant, long-term share in this market, offering both the potential of our production capacities and our advanced techniques for processing and extracting uranium.

For the period 1991-1995 our potential for the sale of uranium in the external market is at least 5,000 tonnes of natural uranium a year in the form of the end products of complex technological reprocessing. If the demand for uranium in the world market increases, we will be able to

increase our supply. Total uranium stocks in the USSR, according to geological surveys, are assessed at 2 million tonnes.

The centrifugal technique for separating uranium isotopes makes it possible to offer foreign partners not only long-term deals but short-term contracts, too, and where necessary contracts for a single delivery. The Soviet Union is currently open to business cooperation in the sphere of the peaceful use of nuclear power with all countries and international organizations.

Moscow Links Nuclear Safety With Economic Aid

AU0506144191 Hamburg DIE WELT in German

5 Jun 91 p 10

[“mj” report: “Moscow Poses Condition for Aid”]

[Text] Bonn—The USSR obviously makes the acceptance of Western aid for better safety equipment for its nuclear power plants dependent on the extent to which the forthcoming London summit of the seven leading Western industrialized countries are ready to provide economic aid. According to information obtained by DIE WELT, this is why FRG Environment Minister Toepfer met with only hesitating interest from Soviet Nuclear Energy Minister Konovalov concerning his plan to set up, together with Western partners, a program involving billions for the reequipment of Soviet nuclear power plants. As was learned yesterday after Toepfer's return, “for the time being” Konovalov insisted on the standpoint that the west European reservations concerning nuclear power plant safety are exaggerated.

Within the framework of the joint environmental committee, which has been working since 1988, Toepfer agreed with his Moscow counterpart Vorontsov on the establishment of a private German-Soviet environmental office in Bonn to establish contacts between enterprises for environmental technology. In addition, a joint nature preservation prize is to be donated, and next year a “Rhine-Volga Symposium” is to be held, which is to make the experiences of the littoral states of the Rhine in improving the river's water quality “usable” for the Volga.

Concerning the promise by Soviet Defense Minister Yazov to support a rapid stock-taking of the environmental damage left upon withdrawal of the Soviet Army from Germany, Toepfer proposed that the Soviets should take—“with their own means”—aerial photographs of their about 1,000 premises for joint evaluation. This would be a first step toward the desired goal of a closely coordinated “work program.” The question of who is responsible for payment was excluded from the discussion. Bonn has allocated 540 million German marks for “direct aversion of danger” by 1994. According to international law, the sending state must pay for the removal of damage caused by the army, it is stressed “on principle.”

Former Chernobyl Engineer Says 30 Nuclear Power Stations Halted

LD0606210691 Berlin ADN in German 1111 GMT
6 Jun 91

[Text] Munich (ADN)—According to the former chief engineer at the Chernobyl Nuclear Power Station, Grigoriy Medvedev [name as received] "work at the 30 nuclear power stations that were to be built has meanwhile been stopped". Environmental organizations played a considerable role in this event. Protests by citizens also prevented two already completed nuclear reactors, near Rostov and in the Crimea, from going into operation. The 17 Chernobyl-type installations will be shut down during the next few years, Medvedev said in an interview, pre-released today, with the Munich magazine BRAVO GIRL. Since the Chernobyl disaster five years ago there has been a real explosion of opinion against nuclear power installations in the Soviet Union. In contrast to this the Western position toward the threat posed by nuclear power stations is "on the feeble side".

Medvedev, author of the book "Burned Souls" ["Verbante Seelen"] thinks there are no absolutely safe nuclear power stations. However, the German installations are safer than the Soviet ones.

UKSSR Council of Ministers Deputy Chairman Sees Future in Nuclear Power

91W0446B Kiev PRAVDA UKRAINY in Russian
26 Apr 91 p 2

[Interview with Konstantin Ivanovich Masik, first deputy chairman, Ukrainian SSR Council of Ministers, by Aleksandr Sokol: "A Reminder of a Sad Anniversary", date, place not given]

[Text] [Correspondent] Konstantin Ivanovich, it has been five years since the day the Chernobyl disaster burst forth. The attitude toward Chernobyl and evaluations of it have changed significantly, especially of late. What can you say about the position of the state, of Government actions, on two levels, both the union and republic levels?

[Masik] As you know, what happened in Chernobyl was originally labeled an accident; then they carefully spoke of the atom getting out of control. Today, this terrible disaster has taken on its true name—this is a catastrophe. That, perhaps, says it all.

The past five years have shown that the Chernobyl tragedy is not the sort of one you can attack and quickly set right. It is generally known that during the ominous days after the accident the theoretical physicists at times did not know what to expect from the exploded reactor. Unfortunately, even today the forecasts, ours and foreign ones, are contradictory in many ways. Yet scientists are in agreement on one thing: Chernobyl is a disaster for all mankind—a tragedy for hundreds, even thousands of years for millions of people.

This is from where it should have begun, from the earliest, for each issue! Unfortunately, only the past one and one-half years have they started to function this way. There were many Chernobyl resolutions from the USSR Council of Ministers, the republic government—on the evacuation of people and compensation for the losses they had suffered, on protecting the Dnepr waters, on building a "cover" over the destroyed AES [nuclear electric power station] power unit; later, on moving residences from the contaminated regions, on privileges for the victims. Gargantuan efforts were undertaken to ameliorate the Chernobyl disaster. Yet they were not in all ways the measures that the circumstances required.

The situation has changed recently. The USSR Supreme Soviet has discussed the Chernobyl problems twice, last year and just recently. The republics have taken up Chernobyl more boldly and on a broader level. Both we and our Belorussian friends have made most important state decisions on Chernobyl. The package of Ukrainian laws is well known: on the concept of safe residence within the territory with increased levels of radioactive contamination, on the status of such territories, on the status of citizens who have suffered. Some sort of imperfections could probably be found in these documents, but these do not hold the essence. The essence is that the laws adopted in the republic reflect the existing situation; they are adequate to the tragedy we call Chernobyl.

[Correspondent] On which of these documents, which of their statutes should attention be focused?

[Masik] As far as the documents are concerned, the point of departure is the concept of safe residence in the areas with radiation contamination. This law, as we are wont to say, is the main one and it genuinely protects Chernobyl victims, all of them, both those who suffered earlier and those suffering now.

The concept of L. Ilin and his supporters previously in effect, the crux of which is 35 rems over a lifetime was conditional. And typically, it has not been officially confirmed anywhere. Yet it was insistently considered binding. Such actions have been evaluated as inhumane, to put it mildly. The approach legalized by the republic Supreme Soviet proposes seven rems over a lifetime. We consider any irradiation leading to an excess of the dose received from the natural radiation background to be dangerous to man, and must be eliminated. Such an understanding of the problem presupposes the highest level of medical services, and the same level of control over a person's health, providing him with "clean" food products, and production safety, above all in agricultural activity. If it is impossible to achieve all this, then there is only one way out—to resettle to clean regions.

The second aspect on which I would like to pause is this. Both our laws and the Belorussian laws have finally given the Chernobyl victims comprehensive legal defense. Unfortunately, before these laws, there had been none, over the course of five years.

The resolutions that were adopted earlier concerned one or several problems, and sought to minimize state expenditures. We took a different route. But I will be frank: I foresee colossal difficulties on the path toward realization of the republic laws.

[Correspondent] What are these difficulties?

[Masik] Just one thing: Where to get the money needed to cover the expenses associated with the realization of these laws. Speaking at a session of the republic Supreme Soviet, I said that the Chernobyl laws cost R5.187 billion. I won't begin to describe the budget possibilities; the budget deficit is well known. The crisis in the economy is also well known. The poorly considered price increases undertaken by the USSR Cabinet of Ministers has exacerbated the situation. In particular, strikes have broken out. And after all, money can only be earned...

A union law on Chernobyl is now being considered. In connection with this, I was recently in Moscow; I addressed a session of the USSR Supreme Soviet. They are reproaching the Ukraine, and severely. First Deputy Prime Minister V.Kh. Doguzhiyev spoke from the high tribune that we hurried with the laws, that we placed the Union in a difficult position. But there can be no agreement with that. The Chernobyl victims can wait no longer, neither in the Ukraine, nor in Belorussia, nor in the RSFSR. Both we and the Belorussians have been forced to adopt the appropriate laws. After all, five years have passed since the accident!

[Correspondent] Do our laws differ from the Belorussian ones, particularly in the amount of the privileges?

[Masik] In principle, they are similar. But there is a difference, a small one. Incidentally, that's how it must be. Conditions in the Ukraine and Belorussia are not identical; certain divergences are natural.

[Correspondent] Can you say which concrete statutes of the Ukrainian laws are causing the disagreement from the center?

[Masik] The center disagrees with an entire range of privileges. There they feel that the republic has overstepped all bounds, for example, by stipulating payment to those residing under contamination conditions from 1 to five curies per square meter, even though everyone understands that protection from radionuclides requires supplemental funds. The compensation to enterprises, kolkhozes, and sovkhozes that have lost their basic funds as a result of the accident is causing objection. Yet how are these collectives going to live under market conditions? It's not through their own fault they have lost all their property dug up over many years.

Our position is simple: the victims, whether "clean up workers," evacuees, or the resettled receive full compensation from the state. Compensation for the damage done to their health, their lost property, the move to a new place and getting set up there; compensation for the

additional expenses incurred by residing within contaminated territory. It's time to profess humanism not only in words but in deeds.

Incidentally, according to information from Moscow, the USSR Supreme Soviet Committee on Ecology will bring the Chernobyl draft law up for a second reading. Many statutes of the Ukrainian and Belorussian laws are taken into consideration in this draft law. There will be the usual decisive debates. We are in favor of making the laws on Chernobyl a priority.

[Correspondent] Konstantin Ivanovich, the Ukraine is putting substantial effort into reducing by one year the center-defined period for resettling people who were in the contaminated territory. The number of people eligible for resettlement will grow with the republic's adoption of the new concept of safe residence. How is this problem being resolved?

[Masik] As you know, about 15,000 people were resettled in 1990, and the resettlement of 14,800 families, approximately 36,000-38,000 people, is proposed for this year. I have these figures in my heart. We face an enormous volume of work! Plus the current situation in the economy. And a completely new problem has made itself keenly felt—cost increases in the construction complex. According to specialist, prices have increased three-four fold, and the union organs are increasing the previously stipulated allocations by a factor of 1.6, and they say that since the situation has worsened there in the republic, you look for extra resources at home. I have already spoken of our budget deficit; I won't repeat myself. But I would just like to say this. The republic government will do everything possible to solve this problem.

I would also like to touch upon the national and state communities—I have in mind collective construction of housing for the resettlers. The bricklayer, the work superintendent, the trust director, the minister, the deputy chairman of the Council of Ministers, everyone must understand that a concentration of efforts, of the science and technology potential of the entire republic is required. Otherwise we will not master the task that has been raised. I appeal once more to the leaders of Dnepropetrovsk and Zaporozhye Oblasts: Understand the pain of Chernobyl, don't look for reasons for refusal; build, assist, just like all the other oblasts of the republic. In this matter, the order of precedence is criminal.

In its time, thousands of people went into the breach of Chernobyl. They were defending not just the nearby territories. Everyone should know this. They should know this and make the best contribution they can to overcome this disaster, the likes of which mankind had not yet known.

[Correspondent] Not infrequently, there is speculation going on over the Chernobyl problems. This was especially noticeable during the elections, and the same thing can be encountered even now. What can you say on this subject?

[Masik] Such actions are disgusting. It is simply criminal to speculate on human grief, especially such as Chernobyl, to achieve one's narrow political goals by such means. Sooner or later, the people will figure it all out, and will give those who reveled in declarations and did practically nothing their due. I don't envy the fate of such people. Damnation awaits them.

[Correspondent] Since the Chernobyl disaster, people's attitude toward nuclear technology, and above all toward nuclear power plants has changed radically. Not infrequently, an AES is perceived to be a continuation of Chernobyl. Those living near AES's, and not only they, are going to extremes; they are prepared to wipe the plants off the face of the earth. At the same time, departments and many specialists persuade, with a pre-Chernobyl lack of concern, that an AES is almost a blessing, that it holds no dangers. What is the attitude of the republic leadership toward this? What do you personally think?

[Masik] As you know, the republic Supreme Soviet and government have taken a hard line: A five-year moratorium has been imposed on the construction of all new nuclear power units. A resolution on shutting down the Chernobyl AES was adopted this year. In 1993, 1994, and 1995, all three working units will be shut down.

By specialty, I am mechanical engineer; I am not a nuclear physicist, therefore I would not like to get involved in a discussion. Yet the information I have on this problem, and it is top-notch information, allows me to say this.

As we know, 15 nuclear power units are functioning in the Ukraine. Such a saturation without deep scientific expert studies, without accruing the necessary experience is impermissible. It is also undisputed that an RBMK [high-power channel-type] reactor cannot be called safe in its operation. Therefore it is not without grounds that such apparatus alarm people.

The conclusion is obvious: The policy that has been conducted by the Government, the USSR Academy of Sciences, and Academician A.P. Aleksandrov cannot be continued. But that cannot be the end to it.

The Ukraine does not possess the needed quantity of fuel. We have practically just coal, and the structure of industry is such that an expansion of power capacity is required. Where can we get this capacity? They say we can purchase natural gas and oil. But when will the republic have the hard currency for that?

I believe in science, and I hope that over the course of five years there will appear here reliable, I emphasize, reliable reactors, and that they will become integrated, after hundreds of tests, hundreds of expert consultations with foreign scientists and specialists. Chernobyl must not be repeated.

[Correspondent] I recall how one year after the Chernobyl explosion, the school seniors who moved from

Pripyat to Kiev arranged to gather on Kreshchatik Street and commemorate the "day of the atom." They were persuaded not to do it. On more than one occasion, the wish of adults to note the sad anniversary has been hindered. How are things today?

[Masik] Unfortunately, what you describe did happen. Now, this date is commemorated on the state level. An official organizing committee has been created; I have been entrusted to head it. A range of measures is provided for, including a TV-radio marathon, a scientific practicum conference with the participation of foreign scientists, a requiem rally, and others.

The purpose of the planned actions is to remember those who struggled in Chernobyl, who died, to help as much as possible those who are suffering from the radiation, to unite forces to protect all those who have suffered, and to prevent another Chernobyl. I am impressed by the appeal of the public organizations to the political parties to bring the raging political passions to a halt for that time, not to exploit the national misfortune in the political struggle.

Ecology Committee Chairman Salykov on New Chernobyl Victim Law

91WN0447A Moscow TRUD in Russian 8 May 91 p 1

[Interview with Kakimbek Salykovich Salykov, chairman of the Ecology Committee of the USSR Supreme Soviet, by V. Badurkin: "Social Protection for the Victims of Chernobyl"]

[Text] Yesterday in the country's Supreme Soviet, there was an article-by-article discussion of the Law of the USSR: "On the Social Protection of Citizens Suffering as a Result of the Chernobyl Disaster." The accident at the Chernobyl Nuclear Power Station not only caused a very large-scale ecological calamity but was also reflected in the most direct way in the fates of many millions of people.

Kakimbek Salykov, chairman of the Ecology Committee of the USSR Supreme Soviet, tells our correspondent about the nature and some special features of the new law.

[Salykov] I will begin by saying that the passed law is only a link in the State Program for overcoming the consequences of the disaster intended for the period through the year 2010. In the five years since the accident, new social and economic living conditions have arisen in the regions contaminated with radioactivity, hundreds of thousands of people were forced to evacuate and resettle, and thousands of citizens who took part in the elimination of the consequences are worried about their health—and not without reason. It is necessary to protect their rights. This is the aim of the law.

[Badurkin] Kakimbek Salykovich, were not union legislators late in this matter? After all, the corresponding enforceable acts have already been passed in Belorussia and the Ukraine...

[Salykov] Precisely this is one of the special features of the law. It was supposed not only to take into account the realities of the republic but to go further and expand and specify the measures for the social protection of all citizens who came to harm. A second feature of the law is that it acts directly. That is, it directly defines the amount of compensation and lists the privileges and rights. And as you know, difficulties always arise where money is involved. The possibilities of the republics, especially of Belorussia, are quite limited and for this reason the appearance of a union law was necessary and proper. But preliminary estimates indicate that it will "cost" about 6 billion rubles.

[Badurkin] Many government decrees have been passed during these years that define the privileges for those suffering from the accident. What is new about the law?

[Salykov] In my view, the main thing is that the law defined a basic indicator for the making of a decision on the carrying out of protective measures and the compensation of losses—a level of radiation exposure of the population not exceeding 0.1 rem in relation to the natural background radiation.

In addition, the entire "contaminated" territory will now be divided into four zones: alienation, resettlement, living with protective measures, and living with a privileged social and economic status. Their boundaries will be set depending upon the radiation situation and will be reviewed no less frequently than once every three years. A special list of privileges and compensation is determined for each zone or, more accurately, for the people living or working in it.

[Badurkin] Could you tell about them in more detail?

[Salykov] I do not think that there is any need to do that today. The law will soon be published. I will note only that in preparing it we did not forget about anyone. All of those who are or were in any way affected by the consequences of the disaster receive compensation and privileges.

[Badurkin] Kakimbek Salykovich, it is well known that here in our country there are many people who suffered from radiation even before the disaster at Chernobyl. In particular those who participated in the testing of nuclear weapons. The problems of their social protection were also raised repeatedly in our newspaper. Do the provisions of the law extend to them?

[Salykov] The decree of the USSR Supreme Soviet on the procedure for the implementation of this law provides that beginning in 1992 compensation and privileges will be extended to all those with radiation sickness and also those who were disabled as a result of radiation accidents and their consequences at civilian and military installations.

At the same time, it is proposed that measures be specified for the social protection of persons having suffered from these accidents and their consequences. I

think that the corresponding draft law will be prepared by the time of the fall session of parliament.

Book Cites Goskomgidromet Head Testimony on Post-Chernobyl Cover-Up

91WN0447B Moscow *KOMSOMOLSKAYA PRAVDA* in Russian 26 Apr 91 p 2

[Excerpt from book by USSR People's Deputy A. Yaroshinskaya: "Truth With the Stamp of 'Secret': Thousands of People Were the Heroes and Victims of the Chernobyl Tragedy"]

[Text] This first became known to people's deputies of the USSR on 24 June 1989 in the course of the discussion of the candidacy of Yu.A. Izrael for the post of chairman of the USSR State Committee for Hydrometeorology [Goskomgidromet] at the conference of the Committee of the USSR Supreme Soviet on Questions of Ecology and the Rational Use of Natural Resources. In speaking to the deputies about his program, Yuriy Antoniyevich anticipated their questions and declared:

"I will tell about two problems in which we took part. In the first place, we took part in the cleaning up of the accident at the Chernobyl Nuclear Power Station. Here Goskomgidromet took a most active part beginning on the 26th. Ten aircraft and helicopters were already working there three or four days after the accident. All of the meteorological stations in the European part of the country were involved. This is more than 1,000 stations. These data were reported **every day** (my emphasis—A.Ya.) to the government commission in Chernobyl and to the commission of the Politburo, which was located in Moscow. Extremely important decisions were made on the basis of these data. As you know, 116,000 people were evacuated. Subsequently the Ministry of Health and Gosagroprom calculated with us the possible consequences based on these data. The Ministry of Health and Gosagroprom made decisions with respect to continuing vital functions in those regions that were subjected to radioactive contamination.

"Information on the contamination was regularly transmitted not only to the directing agencies but also to the councils of ministers of the republics subjected to radiation. Above all this was Belorussia, the Ukraine, Bryansk Oblast, and the corresponding oblsipolkoms.

"As for the data on the villages, I have this all of this information in my folder and it was given to the councils of ministers and oblsipolkoms so that they could pass it on to the villages."

This was essentially the first official information about who received the measurements of radiation levels and contamination maps.

The next forced "undressing" of those who concealed the information obtained was done by Yu.A. Izrael within three weeks, on 12 July 1989 in the session hall, where

his candidacy for the post of chairman of USSR Goskomgidromet was proposed in the name of the Government of the USSR. Here Yuriy Antonyevich, understanding that all the blasts of the deputies' indignation would be vented on him, said even more:

"From the first day after the accident until today, this information was communicated to the Politburo commission headed by Nikolay Ivanovich Ryzhkov, to the government commission that was working in Chernobyl, to the CPSU Central Committee, to the councils of ministers of the union republics, and to the oblispolkoms. And they are obliged to get the information to the population."

The lobbies of the deputies' building resounded with the demands of deputies that a special parliamentary commission be established to look into the reasons for the accident at the Chernobyl Nuclear Power Station and to evaluate the officials who concealed information about the radiation situation in the course of three years after the accident. And the louder these voices were and the more realistic this became, the more intensively Izrael issued information to the deputies about how promptly the machinery of Goskomgidromet worked. Having begun in 1989 with the organizations and departments to which information was sent from the first days after the accident, by 12 April 1990 Yuriy Antonyevich had already proceeded to the specific family names of high and very high officials. Precisely this was the day of the joint session of two committees of the USSR Supreme Soviet—on questions of ecology and the rational use of natural resources and on the protection of the health of the people. It preceded the parliamentary hearings on Chernobyl.

This is what Yu. A. Izrael said under the pressure of the people's deputies: "...on 27 April, Goskomgidromet send a report on the radiation situation in the region of the Chernobyl accident with diagrams with the heading at the top 'To the CPSU'; there were no family names on this document." From out of the silence in the hall was heard the distinct question: "Did they also send it to the watchman?" In response Yuriy Antonyevich explained: "There is a routing form. If I prepare a program on behalf of the Council of Ministers, I do not write to Comrade Ryzhkov but I write 'USSR Council of Ministers.' There is such a form..."

INSTRUCTION OF THE THIRD MAIN DIRECTORATE OF THE USSR MINISTRY OF HEALTH ON 27 JUNE 1986 "ON THE STRENGTHENING OF THE REGIMEN OF SECRECY IN THE PERFORMANCE OF WORK TO ELIMINATE THE CONSEQUENCES OF THE ACCIDENT AT THE CHERNOBYL NUCLEAR POWER STATION":

"...4. Classify information on the accident... 8. Classify information on the results of treatment. 9. Classify information on the extent of radioactive exposure of personnel participating in the elimination of the effects of the accident at the Chernobyl Nuclear Power Station.

Chief of the Third Main Directorate of the USSR Ministry of Health Shulzhenko."

Still another document issued by the government commission itself: **"LIST OF INFORMATION ON QUESTIONS ABOUT THE ACCIDENT AT THE CHERNOBYL NUCLEAR POWER STATION THAT ARE NOT SUBJECT TO PUBLICATION IN THE OPEN PRESS OR RADIO AND TELEVISION BROADCASTS," No 423 FROM 24 SEPTEMBER 1987.** It prescribed that the following should be classified: "1. Information on levels of exposure to radiation at individual population centers that exceed the permitted level (GDU). 2. Information on the indices for the worsening of physical working capacity and the loss of occupational skills by personnel working under the special conditions at the Chernobyl Nuclear Power Station or of persons brought in to eliminate the effects of the accident."

The minister was nervous, and for good reason. All at once Izrael revealed dozens of family names of high-ranking persons to whom the information was sent from the first days. I quote from the original shorthand record that was kept at that time in the parliamentary hearings: "To the CPSU Central Committee and Council of Ministers without family names on 27 April (here and further, 1986), to Nikolay Ivanovich Ryzhkov and the USSR Council of Ministers on 30 April, to Nikolay Ivanovich Ryzhkov on 2 May, to Nikolay Ivanovich Ryzhkov on 3 May, to Nikolay Ivanovich Ryzhkov on 4 May, to Murakhovskiy on 7 May, to Murakhovskiy on 12 May, to Gusev on 13 May, to Kovalev on 15 May, to Shcherbina on 18 May, to Gorbachev on 21 May, to Ryzhkov on 21 May, to Kovalev on 27 May, to Murakhovskiy on 24 May, and to Ryzhkov, Ligachev, Dolgikh, Chebrikov, Vlasov, Sokolov, Vorotnikov, Murakhovskiy, and Shepin on 26 May. If necessary, I can continue." This is a day-by-day account. But it was also kept by the hour. That same night, at 0300 (that is, literally an hour or an hour and a half after the accident), it was reported from Chernobyl to V. V. Maryin, who at that time was in charge of the nuclear energy sector of the CPSU Central Committee. All of those named are responsible persons from the Government of the USSR, Russia, and KGB, and members of the country's top political leadership—the CPSU Central Committee and Politburo.

EXPLANATION OF THE CENTRAL MILITARY MEDICAL BOARD OF THE USSR DEFENSE MINISTRY, 8 JULY 1987, No 295, SENT TO THE MILITARY COMMISSARIATS:

"1. Leukemia and leucosis should be considered among the distant consequences from the action of the ionized irradiation and in a causal relationship with it, appearing five to 10 years after the irradiation in doses exceeding 50 rad. 2. The presence of acute somatic disorders as well as signs of the exacerbation of chronic illnesses in persons involved in the elimination of the effects of the accident and not having acute radiation sickness should not be linked causally with the effect of the ionized irradiation. 3.

In putting together the evidence on the illness for persons previously brought in to work at the Chernobyl Nuclear Power Station and not suffering radiation sickness, do not reflect in Point 10 the fact of their involvement in the indicated work and the total radiation dose below the level of radiation sickness.

Chief of the 10th Medical Consultative Commission, Colonel of the Medical Service Bakshutov."

Yu.A. Izrael:

"An operational group was organized in the Ukraine. At that time, besides these comrades, they also regularly started to include in the operational group a civil defense staff, which was also involved in this work. And, of course, departments—the Ukrainian SSR Academy of Sciences, the Ukrainian SSR Ministry of Health, etc. In addition, these maps also went to the oblsipolkoms or to the obkoms; at that time we did not distinguish here. We sent absolutely all of the information to the Ukrainian and Belorussian Councils of Ministers and somewhat later to the Council of Ministers of the RSFSR." On 26 April 1986, to the Central Committee of the Ukrainian Communist Party, First Secretary V.V. Shcherbitskiy, Secretary Kachura of the Ukrainian Communist Party Central Committee, and the Ukrainian SSR Supreme Soviet. To V.S. Shevchenko, chairman of its Presidium and member of the Politburo of the Ukrainian Communist Party Central Committee. Also, to Bakhtin and the Ukrainian SSR Council of Ministers—Lishko, Boyko, Kachalovskiy, and Kolomiys.

The documents that were sent to them stated that the levels of radiation in Kiev increased abruptly on 30 April 1986. It is well known, for example, that on Nauka Prospekt the radiation levels were a maximum of 2.2 millirem and a minimum of 1.4 millirem. "Toward evening they declined," Izrael goes on to explain, "and the level was 0.61 on 1 May, 0.85 on 2 May, 0.7 on 7 May, etc. After that it is already declining. That is, on the 30th (of April 1986—A.Ya.), there was a dramatic increase in the level of radiation at precisely 1300. We passed this information on to the Central Committee of the Ukrainian Communist Party and to the Ukrainian Council of Ministers. And our information was known to the leadership... It was sent to Shcherbitskiy and Shevchenko, and to a number of Central Committee secretaries.

Yu.A. Izrael: "On 7 May, there was a meeting of the Politburo of the Ukrainian Central Committee, to which they invited me, Ilyin, an academician, and one other representative of the Biophysics Institute, whose family name I will specify later but do not remember right now. At first they verbally asked for our opinion on the evacuation of the city of Kiev, because by that date some of the population had spontaneously begun to leave Kiev. Not just children but also adults started to leave. The cash boxes were overflowing. I do not know but apparently this question was examined at the meeting of

the Politburo of the Ukrainian Communist Party Central Committee under the influence of these reasons. They asked for my opinion and that of Ilyin. I said that I can present (which I did) data on the levels of radioactive contamination. Ilyin and I assessed the dose loads in comparison with the criteria that were set for evacuation. On this basis, we, as experts, stated that at these levels of radiation there was no justification for the evacuation of the population from the city of Kiev. At this point, when Shcherbitskiy told us to "put it down in writing," we sat and wrote for several hours. We understood that we were performing the responsible role of experts. We did that this and we wrote. Shcherbitskiy put this document in the safe and closed it.... "Good," they said.

And today, five long and painful years later, which millions of people lived through in ignorance of the danger and enveloped in the deceit of the officials, many of them are still holding key positions in the Communist Party, supreme soviets, and governments of the country and republics. Some of them left for their well-deserved—as we generally say here—rest and are receiving fabulous special pensions. As, for example, in the case of V.M. Kavun, our former first secretary of the Zhitomir Obkom of the Ukrainian Communist Party. He moved from Zhitomir to Kiev and here they immediately offered him a state apartment and gave him a specially increased pension. By the way—and this is also quite secret—I learned about this from, N.I. Ignatovich, the chairman of the parliamentary commission on advantages and privileges. He told me how difficult it was for his commission to obtain from the Council of Ministers a list of special pensioners at the national level. It turns out that inspite of a pension "ceiling" of 250 rubles [R] for civilians and R300 for military people, apparently there are still superpensions for some special services. They are the ones who receive R500 and even R700. The list of these pensioners also included Vasily Mikhaylovich Kavun, a holder of five orders of Lenin, orders of the Red Banner of Labor and Friendship of Nations, countless medals and different decorations, and a Hero of Socialist Labor. By the way, he received his fifth Order of Lenin 2 years after the accident. (Perhaps it was for keeping silent about Chernobyl, among other things?) After all, as A.S. Malinovskiy, chairman of the Zhitomir Oblsipolkom, stated on 31 August 1990 in response to my query as a deputy, "from the first days after the accident at the Chernobyl Nuclear Power Station, an oblast civil defense network of observation and laboratory control was set up to monitor the status of the radiation situation in population centers in northern rayons. The first reports on the strength of the dose of gamma radiation in individual population centers began to arrive at the oblsipolkom from the oblast civil defense staff on 28 April 1986." And from Narodichi on April 26.

ORDER OF THE USSR MINISTER OF POWER AND ELECTRIFICATION A.I. MAYORETS. It speaks of the information that should be kept secret from

the public. That included data on the accidents and fires at power and construction facilities of the USSR Ministry of Power and Electrification, contamination of the environment, the breakdown of basic equipment and the level of material losses and human victims, etc.

Former leaders at the oblast level have now been promoted. Today Deputy Chairman of the Zhitomir Oblispolkom G.A. Gotovchits is head of the Ukrainian State Committee for the Protection of the Population Against the Effects of the Accident at the Chernobyl Nuclear Power Station. Yu.P. Spizhenko, formerly in charge of the oblispolkom health department, is now minister of health of the Ukrainian SSR. G.S. Tarazevich, former chairman of the Belorussian Supreme Soviet Presidium, is now head of the Commission for National Policy and International Relations of the USSR Supreme Soviet. The list can be continued.

Nor did they let A.Ye. Romanenko, former minister of health of the Ukrainian SSR, fall. They put him in the chair of the director of the All-Union Center for Radiation Medicine. Almost all of them persistently assured us from the beginning until recently that "nothing was threatening the health of children," and then they said that they "had no information," they "did not know," etc.

When Deputy Vitaliy Chelyshev asked Izrael about the First of May demonstration in Kiev after the explosion, Yuriy Antoniyevich answered: "I repeat once more that neither I personally nor a single representative of Goskomgidromet participated in the discussion of this matter or knew whether or not there would be a demonstration."

Three months later, in a discussion with deputies and experts in the Committee on Ecology on 20 July 1990, Yu.A. Izrael continued to declassify, even revealing details on practically every radioactive cloud.

Yu.A. Izrael: "This map shows what is most essential. ... Yes, to put it concisely, this is an accurate map, as are all of the maps or, more precisely, the diagrams that we sent to the Central Committee and Council of Ministers. Exposures were taken every day. After three or four days, we already had eight aircraft and helicopters that also measured the overall gamma radiation—the strength of the dose and the spectrum of the gamma radiation.

"—since I was in Chernobyl and in Kiev, I regularly sent telegrams from Kiev to Ryzhkov (every other day) and to Secretary of the KPSU Central Committee Dolgikh less frequently."

Ultimately Izrael moved to the operational group of the Politburo and—by name—to the government commission.

Yu.A. Izrael: "We reported to the operational group of the Politburo. But it was at the end of July when we reported. There were three memoranda. From each

council of ministers, I emphasize. The Council of Ministers itself worked on its own with the oblispolkoms of the Ukraine, Belorussia, and Russia. Ryzhkov was in charge of the Politburo group.

"This commission met exceptionally frequently. I do not know exactly but I think that during May it met at least every other day. After that somewhat less frequently.

"The government commission was headed by the deputy chairmen of the Council of Ministers. The first was Shcherbina, the second Silayev, the third Voronin, the fourth Maslyukov, the fifth Gusev, the sixth Vedernikov, and the seventh Shcherbina."

THEY KNEW. They all knew. And they knew everything.

Yuriy Antoniyevich wanted at all costs to show that he performed his duty well, that he is not guilty of anything, and that the publicizing of the information was not his doing. Here is the response that he repeated in different versions during several hours of personal contact: "As for the official information—yes, we sent the full information to the councils of ministers. And speaking of the oblast committees, we sent these data to the Gomel Obkom. By the way, the Gomel Obkom was the most active.... We sent these data to Mogilev. I have this information.

"I have a map. It is another matter that the isotope composition went to them later. I have proof that they distributed even to the rayon party committees and rayispolkoms...." People's Deputy of the USSR Vitaliy Chelyshev asked why the population was not informed. Izrael answered by saying: "Ask this question to the Council of Ministers of the republics, because our duty was to inform the leaders and they take it from there...."

And here is what they did with it.

FROM THE ADDRESS OF MINISTER OF HEALTH OF THE UKRAINIAN SSR A.YE. ROMANENKO ON REPUBLIC TELEVISION ON THE 10TH DAY OF THE TRAGEDY.

"Do not drive out into the countryside, close your shutters, and wash down the premises...."

It was not until after 20 May, that is, almost a month after the accident, that the order was issued for several regions: do not drink your own milk. But, on the other hand, this is the kind of remarkable concern that our USSR Goskomgidromet expressed about the "dirty" milk in Poland: "...questions about the consumption of milk in the territory of Poland (our suggestions): 0.1 milliroentgen per hour—this was reported to Ryzhkov." A touching concern about our Slavic brothers in other countries, is it not?

In the three years after Chernobyl, our official medicine—the USSR Ministry of Health headed by Ye.I. Chazov—officially changed the maximum allowable dose of irradiation three times! First it was 70 rem over

a 70-year human lifespan, then it was 50 rem, and finally, beginning in 1987, it was 35 rem. But it was only 25 rem prior to Chernobyl.

In all the hearings and in all his interviews, articles, and addresses, Izrael was completely unable to understand what was obvious to every conscientious person: warn about the danger, for you knew, reported "to the leadership," and understood the threat, especially for children. He knew and remained silent. He persisted in his silence for 3 years and duly continued to report information "to the top." He received the order of Lenin for Chernobyl

[Boxed material]

Academician A. Aleksandrov—was one of the initiators of atomic power. Just as all the other founders, he was among the first to experience the effects of radiation in his own organism. The author of the "Chernobyl" reactor, he remained loyal to it in spite of the storm of accusations. He was consulted by telephone on every action in Chernobyl. He soon left his post as president of the USSR Academy of Sciences.

Academician V. Legasov—former first deputy to Aleksandrov in the Nuclear Power Institute. He flew to Chernobyl with the government commission at 2000 on 26 April. He declared as early as 2 May that the effects of this large-scale accident will be very long-lasting. A year and a half later, he committed suicide under mysterious circumstances.

B. Shcherbina—former deputy chairman of the USSR Council of Ministers. Precisely he was the one heading the government commission from the first days. On the evening of the 26th, he made the decision to evacuate Pripyat, which did not begin until the next day. Working for the first time under the conditions of a nuclear disaster, he himself received a considerable dose.

A. Adamovich—Belorussian writer and people's deputy of the USSR. For five years, he has been fighting—alas, almost without results—for the resettlement of people from the contaminated territories. He was the first to raise the question in public about the radioactive cloud that headed for Moscow and that the services of Goskomgidromet placed on the approaches to the capital.

Yu. Izrael—chairman of USSR Goskomgidromet. It was precisely "his" people who carried out and continue to carry out the dosimetric monitoring of the contaminated territories. In the words of the chairman, there was no cloud moving toward Moscow. This story remains a secret.

A. Grishchenko—a helicopter pilot from Chernobyl. Just as all the first participants in the "elimination of the effects," he knew little about radiation and therefore he worked bravely and without thought above the burning reactor. He died of leucosis last year after an operation in the United States.

A. Yaroshinskaya—a journalist with the newspaper RADYANSKA ZHITOMIRSHCHINA and a people's

deputy of the USSR. She devoted two years to her own deputy's investigation of those who remained silent in regard to the truth about Chernobyl. It was the basis of a book that came out, an excerpt of which we are publishing today.

First Deputy Prime Minister Doguzhiyev on Chernobyl Measures

91WN04544 Moscow PRAVDA in Russian 26 Apr 91
Special Edition p 1

[Excerpt from speech by Vitaliy Doguzhiyev, first deputy prime minister, at an unspecified USSR Supreme Soviet session: "What Has Been Done and What Lies Ahead?"]

[Text] We will have to concentrate on two main objectives. The first is to move people out of polluted territories with a reading of 40 or more curie units. The second is to draft fundamental documents, starting with a theory of safe habitation.

As far as the first of these tasks is concerned, I must say that this was completed last year. All republics kept up with construction plans. The overall plan was fulfilled by 105 percent. State centralized capital investments financed the completion of 630,000 square meters of housing, which was equivalent to 108 percent of the plan. The plan for the construction of pre-school establishments, general educational schools, and out-patient clinics is being overfulfilled.

Special attention has been paid to the construction of facilities connected with the program of emergency measures for the resettlement of the inhabitants of territories contaminated by radioactivity. The housing that was completed for resettlement purposes amounted to 552,000 square meters, or 110 percent of the plan. Almost 88,000 people were resettled. You may recall that the target figure in the program was 29,000. All assignments were overfulfilled in the Russian Federation, the Ukraine, and Belorussia.

Now I want to say a few words about the theory. It has been approved by the USSR Cabinet of Ministers and is being implemented. What are its salient points? Whereas our earlier approach focused on the pollution of the territory, now we (just as all other countries) are using the radiation dosage as the main indicator. This will allow us to concentrate on reducing the dosage. This is what affects human health first.

There is one matter we should probably consider more carefully. We should not regard the resettlement of people as the only way of solving the Chernobyl problem. Moving is always stressful for people. They have to deal with the problems of getting used to a new place and giving up old habits. We have to give people a chance to make the decision to move on their own. From the standpoint of science and of experience throughout the world (and we are making use of all this experience), there is no need to move people out of territories with under 15 curie units.

The main consideration, of course, is the state of people's health. Whatever figures we cite and whatever topics we discuss, this has always been our primary concern. The data of epidemiological studies and clinical observations indicate certain negative tendencies in the state of the health of the population of these regions. We have discovered several abnormalities that could be connected not only with improved diagnostic techniques, but also with the adverse effects of various factors related or unrelated to radiation. The latter category includes changes in the customary way of life and diet. It is particularly important to consider the protracted mental and emotional strain produced by the stressful situation in this zone. In virtually all of the monitored regions there was a higher rate of iron deficiency anemia caused by a faulty diet and a shortage of the protein and the fresh vegetables and fruit serving as sources of vitamins.

An analysis of the physical complaints of the people living in the zone will have to, however, reveal a number of features characteristic of direct exposure to radiation. The forecasts compiled in accordance with a survey of the Supreme Soviet's primary medical data on 876,000 people show an expected prevalence as a result of the accident, according to 220,000 members of the clean-up crews and of those that they serve, more than half a million of them.

Members of clean-up crews were given supplementary medical examination in 1989. Some 22,000 army inter-departmental units of troops were set up on the territory to perform any and every other relationship between the clean-up operations and subsequently at emergency assistance.

The introduction of laboratory, diagnostic and control equipment, and the construction of special the immunological centers, improved in 1990. The network of diagnostic centers, general hospitals, and specialized and other medical centers grew.

The general VSE Meditsina (Health) department is a member of the regional in addition to the central symbols for the primary medical health. We cannot call the symbols of medicine for the radiological of the zones completely satisfactory, however, it is only the most acceptable effort has made to be achieved for the future of the future.

The long-term progress of the health of the people is a gradual process and the only way to it is by the improvement of the medical and the health of the population of the zone. The only way to it is by the improvement of the health of the population of the zone. The only way to it is by the improvement of the health of the population of the zone.

The development of high-quality agricultural products from the zone is a very important. However, the development of the zone is a very important. However, the development of the zone is a very important. However, the development of the zone is a very important.

the zone fall within the current permissible pollution limits, and the content of radioactive substances in grain crops has been reduced to one-fifth or one-sixth of the previous amount. The radioactive cesium content of crops, including vegetables and fruit, grown on territories with pollution levels of up to 40 curie units per square kilometer effectively does not exceed the international standard. Today people in all parts of the zone have learned to adjust the diet of livestock in such a way that the pollution level of meat will not exceed the permissible limit. Meat containing more than the permissible amount of radioactive cesium is found only in livestock slaughtered prior to the completion of the pre-slaughter feeding routine. According to data for 1990, the quantity of this meat did not exceed a limit measured in hundredths of a percent. The maximum was 0.09 percent in Gomel Oblast. In 1990, meat exceeding the current permissible pollution level in all of the polluted territories of Belorussia amounted to only 0.01 percent of the total 784,000 tons of livestock in slaughter weight.

The radiation levels of agricultural products in the country are monitored by more than 1,200 radiological laboratories. This is enough to secure strong quality control in the state sector.

Measures have been taken to increase the output of household devices for dosimetric radiological monitoring so that people can assess the level of radiation in their place of residence, employment, and leisure. Whereas we had around 7,000 of them in 1989, more than 240,000 were already being produced in 1990, and this year republic requisitions will be covered by the production of an additional 100,000 (50,000) devices, which should cover the initial demand. These were the assignments set by the concerned ministry.

Officials Counter Claims of Chernobyl Reactor Containment Dangers

VIA 004684 Moscow (I ASNOS) in Review N 78
19 May 1990

[Interview with Yu.M. Cherkashov, chief designer of pressure tube reactors from the Scientific Research Institute for Power Technology and V.E. Shkalyov, chief of the Laboratory for Automatic Control Systems of Nuclear Power Stations from the Academy Institute of Nuclear Power from Kurchatov by V. Starostin. "But How in Reality: The Chernobyl Saraphagus" (I ASNOS introduction)]

[Text] It looks as if the durability tests of the Chernobyl saraphagus are continuing. At first it was tested by the first point earthquake—an echo of the well-known Carpathian shocks, but now on the occasion of the sad anniversary of the accident at the nuclear power station, by some of the mass media that have spread rumors about the unreliability of the saraphagus.

[Starostin] Thus, the German newspaper *BERLINER ZEITUNG*, with a reference to the deputy chief of the technical department of the Chernobyl Nuclear Power Station, V. Gruzdev, greatly frightened its readers with the news that the processes taking place inside the sarcophagus are fraught with new ejections of radioactive substances into the atmosphere. The 1,100 ton "lid" covering the reactor at which, five years ago, the accident took place, supposedly tilted by 15 degrees. If it is destroyed, the newspaper writes, there will be a terrible catastrophe. In this case, first of all the people who continue to work at the nuclear power station will suffer, but, given the requisite strength and direction of the wind, regions that have in the meantime not been touched by it will be subjected to radioactive contamination.

This assertion has been interpreted in all ways by other mass media, true, already without reference to V. Gruzdev, since none of the scientists, specialists and journalists involved with the sarcophagus are familiar with his name. The official duties of the deputy department chief of the nuclear power station do not directly include either the sarcophagus or, even more so, prognosticative assessments of its conditions. For this reason, we shall leave to the conscience of V. Gruzdev, if he, of course, actually did speak on this subject with a Western correspondent, such critical statements and listen to people who are competent in this question: The chief designer of pressure tube reactors from the Scientific Research Institute for Power Technology, Yu.M. Cherkashov, and the chief of the Laboratory for Automatic Control Systems for Nuclear Power Stations from the Academy Institute of Nuclear Power imeni Kurchatov, V.F. Shikalov.

According to Yu.M. Cherkashov, the metal construction of the upper biological shielding—and this was precisely what was at issue in the the German newspaper—is in the same condition in which it was on 26 April 1986 and there are no movements taking place in the scheme. This is indicated by laser observations, stability characteristics, and other data. Not even the 4-point earthquake influenced the metal construction—after the disaster it stands like a rib to the reactor, having been reliably fixed in the concrete foundation.

The problems connected with the further fate of the sarcophagus were discussed in detail at a scientific-technical council, and journalists were also briefed about them during a visit to the nuclear power station. The policy of openness of Soviet scientists and specialists finds complete understanding, although, as Cherkashov believes, from time to time there also appear publications that are extremely far from the truth. Concretely, the problem lies in taking the best technical decision. For the time being, there are two proposals. The first, to install in this place a burial ground, having put away the destroyed reactor in concrete for centuries. The second—continuing the work on increasing the reliability of

the sarcophagus, to go after effective and safe technology, which will make it possible to dispose of it in time.

Now we shall listen to V.F. Shikalov. The interest of journalists in the sarcophagus and everything connected with it, in his view, is legitimate and understandable. What is not understandable is only how and why such misinformation is appearing in serious newspapers. Indeed, the lobby interviews of incompetent people should not be passed out as facts, all the more so when the question concerns Chernobyl.

Our laboratory, Shikalov says, carries out the diagnosis and monitoring of the condition of the unit involved in the accident and coordinates scientific research and other work connected with the sarcophagus. It would be irresponsible to give a 100-percent safety guarantee even for the decade ahead, but I can assure the readers of the newspaper that its present condition is stable and is no cause for alarm.

Ukrainian Energy Minister Reflects on Chernobyl, Rejects New Nuclear Plants

91WN0446A Kiev PRAVDA UKRAINY in Russian
27 Apr 91 p 2

[Article by Vitaliy Sklyarov, UkSSR minister of energy and electrification: "The Chernobyl AES: Where Is the Truth?"]

[Text] The fifth anniversary of the day of the Chernobyl disaster has already arrived. I will say straight away that I had not intended to time my press piece to appear on this tragic date. And in general I feel that now there is sense in troubling the radioactive ghost of Chernobyl only in those cases where some sort of unknown circumstances are being made public, knowledge of which may help prevent such accidents in the future. As to everything else, what can be said? Those who were to blame have already gotten theirs, and those who distinguished themselves have been rewarded in a befitting manner.

Yet all the same there still appear publications whose authors are hardly looking into the unprecedented disaster for the sake of the future. Old arguments and convictions which had seemed forever buried under the Chernobyl dust are sometimes resurrected. For example, there appeared not too long ago an interview with Academician A.P. Aleksandrov; for the umpteenth time, it blames only the AES [nuclear electric power station] personnel for the accident. As an eyewitness to these events, one who worked at the scene of the accident during the first days after the reactor's explosion, I cannot but express my attitude toward this dubious, and to put it simply, immoral version.

For the sake of appearance, Anatoly Petrovich [Aleksandrov] cites the following comparison: "You're driving a car, and you turn the wheel the wrong way—an accident!"

Is it the motor's fault? Or the auto designer's fault? Anybody would say, 'It's the fault the unqualified driver.'"

On a superficial level, this is very intelligible, even for amateurs. Unfortunately, however, this simile does not reveal the truth. It's one thing that a car bears about as much resemblance to a reactor as a sheaf-binding machine does to the supersonic Concorde. Even a theoretical car cannot be getting more gas while the brake pedal is being pressed, but something like this happened with the reactor. But more on that a little later.

It bears recalling that the official version of the reasons for the disaster, formulated not without the participation of certain individuals concerned, sounded like this: "The primary cause of the accident was the highly improbable combination of violations of the order and regime of utilization permitted by the power unit personnel."

Such an unintelligible explanation immediately caused doubts as to its credibility. Nor was it taken seriously abroad. "The Foreign Press on the Chernobyl Accident and its Consequences," a 1987 informational report asserts that "Differing from the official Soviet point of view, English specialists consider the fundamental cause of the Chernobyl accident to be a construction deficiency, and not the human factor. They consider the erroneous actions of the operators to be a contributing cause." American specialists underscore that the very system for stopping the reactor is capable of causing a power surge.

Unfortunately, the framework of a newspaper publication does not allow the situation to be depicted with all the necessary details. Thus I propose at least running through a few of the most serious violations which are most frequently used to incriminate the station operations personnel.

We begin with the basic accusation: the emergency reactor cooling system (SAOR) had been taken off-line, that is, the reactor was seemingly defenseless, and thus was damaged. Anatoliy Petrovich exclaims, "The AES operated for 11 hours with SAOR shut down! As if a devil were in charge and preparing an explosion!" I do not take it upon myself to judge evil forces, since I'm no specialist, but SAOR, as its name indicates, was conceived to ensure the cooling of an undamaged reactor, and is of help, at best, in the event of a ruptured pressure collector pipe.

In this situation, the conditions for engaging the cooling system arose already after the destruction of the reactor. Incidentally, the executive organs of defense were also incapacitated by the explosion. Yet even if the system had worked, there was simply nothing to cool—the reactor had already ceased to exist.

Thus, the SAOR defense could have worked only after the explosion, when the reactor had already been destroyed and the disaster had occurred. Consequently,

the system could neither have prevented the disaster, nor lessened its consequences in any way.

As far as the possibility of certain other defenses having been shut down, even in the event of the violations that were permitted, these would have had no effect whatsoever on the final result.

The power acceleration and reactor explosion occurred under totally normal staffing conditions for utilization, when there were no grounds for erroneous actions of the operating personnel, and I will be so bold as to assert that they committed none. In addition, they functioned competently and selflessly. Suffice it to recall how people stopped and preserved in their entirety the first, second, and third units, under incredible conditions.

It can be stated with a reasonable degree of certainty that not one of the violations cited, nor others of which the operating personnel are accused could have been, either singly or together, the primary cause of the accident, nor could they have seriously affected its scale and course of development.

I would take this occasion to touch upon another aspect. Since the Chernobyl disaster, rally passions have boiled constantly around other AES's as well; all sorts of demonstrations and boycotts are being organized. Not infrequently, strong pressure is being exerted on the AES operators, which is absolutely impermissible. In no way should a negative attitude toward nuclear power be transferred to AES personnel. This accomplishes nothing other than to create tension and nervousness in their lives, and consequently, will only increase the likelihood of errors capable of leading to a new disaster.

Let us return, however, to the Chernobyl accident. Its basic cause lies in the defective construction of the apparatus created on the basis of an erroneous concept of reactor safety. That concept allowed only for the maximum projected accident, associated with an explosion of the largest diameter pipe system. And mathematical assessment of the degree of risk of accidents outside of these projections, even up to damage of the active zone and the discharge of fuel, were stubbornly ignored.

This is where the roots of the principal errors permitted in the reactor design and construction lie. We can assume that during those stages, the scientific and technological project directors had noble intentions, trying to save the people's money. And here we add constrained technological opportunities and pressing state deadlines... Thus, it was as if fatal errors had been programmed in by the impermissibly low "safety expertise" at all levels of nuclear technology, and by our constant attempts to economize on things. And as we know, a miser pays double. And we have paid immeasurably, for we are speaking about human lives.

And there had been more than enough grounds to be concerned about AES safety. Here is one of them. Not many people know that one and one-half years before 26 April there had occurred damage to the technological

channel of the first unit of the Chernobyl AES, requiring its localization through the construction of a leaden sarcophagus. At that time, the fuel was partially discharged, but the majority was buried in this same sarcophagus. A Chernobyl in miniature! Immediately at that time, this should have shaken up all our science, along with the designers. Yet nothing of the sort happened; they did not heed the formidable warning.

The chain of miscalculations, gross errors, and criminally incompetent decisions was not broken after the reactor explosion. We recall how the scope of the disaster that had occurred was reduced, and the fundamental problem of the early restoration of the electric power station's functional readiness was promoted, how a great number of young men were drawn into cleaning up the accident, a terror-horrorbation was raised.

And, for example, who will answer for the irradiation of the multitude of people who were immediately next to the center of radiation without any particular need to be?

Someone is answering for all this!

The Chernobyl tragedy took us by surprise. It happened at a time when we associated our energy future exclusively with the development of nuclear power. That is why, immediately after the accident, the power engineers of the Ukraine had to undergo very difficult, purely professional trials, which of course were scarcely noticeable against the background of common misfortune. Now it is already quite clear that the republic's power engineering had long been in an extraordinarily difficult situation that could be described as a nuclear coal bag, and at an impasse.

The way out of this critical situation is not being clearly analyzed within power engineering to this day. Because of the dynamics of opposing forces, we have already lost several years, maneuvering between the hopes of the power that be for society's enlightenment, for the cause of AES's, and the furious popular opposition to them and ambitions.

In the meantime, in the shortsighted policy of forcibly pushing through nuclear power stations and retarding the development of other sources, the coming energy hardships have been predetermined.

The introduction of new energy capacities for our country has been hitherto in recent years. In fact, nothing is anything being done to radically alter the structure of consumption and allocation of power-saving technologies. They assert that there is no alternative to AES's, and everything is being done so that there will be no alternative at all. And the almost unhidden case of nuclear power stuck out from under the fair of each variety of possible power calculations.

A situation is consciously being created in which society must choose a choice—either nothing in nuclear power. Low is the fact that gargantuan amounts of money and resources have been invested in the development of

nuclear power, we are decades behind the world level in other areas of energy. And this lag is growing with catastrophic and progressive speed.

It is necessary to summon up the courage to simply state: There will be no new nuclear power stations in the Ukraine! There are other paths to build up the necessary energy capacities. There should be reliance upon wide use of steam-gas installations, which hold a number of substantial economic and ecological advantages by comparison to the aggregates currently in operation. In view of the conversion, the enterprises of the defense complex may be involved in this cause, but at the same time, it is necessary to enter into international cooperation and find the resources for purchasing energy equipment abroad.

It is time to move nontraditional energy forward, to get a practical return from it. I have in mind using the energy of the wind, small rivers, the Sun, and geothermal waters. The Ukraine has been generously endowed with these resources. And in the long term, steady energy systems may be built only on the basis of renewable ecologically irreproachable sources of energy.

Time must not be lost. Collectives of construction workers, assemblers, and designers of ineffective AES's must be diverted immediately to other energy facilities. And other decisions must be made, always remembering that the people will never forget Chernobyl!

Ukrainian Experts Question IAEA Chernobyl Conclusions

(Ukrainian) Izvestia, Moscow, 1991, 17 Apr. (English translation), 22 Apr. 91.

Experts of the Ukrainian key ministry responsible for the population's protection against Chernobyl effects has accused the International Atomic Energy Agency (IAEA) of "deliberately undermining international efforts to eliminate the consequences of the Chernobyl disaster." Journalists attending a Kiev news conference on Chernobyl were told that IAEA experts had charged their Ukrainian colleagues at an international conference in Vienna with overestimating by 5000 percent the level of contamination in areas adjacent to Chernobyl. They had requested the idea of evacuating local residents from these areas as insufficiently grounded and called against international assistance for Chernobyl victims.

More on Ukrainian Specialists' View of Foreign Experts' Chernobyl Study

(Ukrainian) Izvestia, Moscow, 1991, International Section, 18 Apr. (English translation), 18 Apr. 91.

[By: UKRAINEFORM TASS, independent, Aleksey Petrovich]

[That is, (S.M.) UKRAINEFORM TASS]—Appraising both the Kiev-independent experts on the technological consequences of the accident at the

Chernobyl Nuclear Electric Power Station [AES] which foreign experts carried out at the request of the Soviet Government, Ukrainian specialists think that on certain problems their view differs with the appraisals of the colleagues from abroad. This was stated by Georgiy Gotovchits, chairman of the Ukrainian state committee for the protection of the population from the consequences of the accident at the Chernobyl AES, at a press conference in Kiev today. He headed the republican delegation at the international conference on the results of their research which took place recently in Vienna.

"This concerns first of all the medical aspect of the catastrophe," Georgiy Gotovchits noted. "Thus the main conclusion which was drawn at the conference on the results of the experts' work shows that Ukrainian and Belorussian scientists and doctors displayed conservatism in conducting research on the effect of radiation on the environment and on people's health, having exaggerated the significance. But the essence lies in the fact that the foreign experts did not inspect participants in the elimination of the consequences of the accident, and just in the Ukraine alone there are 130,000 of them; and also people who were resettled from contaminated regions of whom there are roughly just as many. Therefore, we think that it is premature to draw such global conclusions. The research needs to be continued." "Many of the conclusions of the experts who conducted immense and fine work coincide with ours," Olga Bobyleva, chief of the administration of the Ukrainian Health Ministry, stressed. "However, what we cannot agree with is that changes to the peoples state of health have been caused by a whole complex of reasons, while the radiation effect here supposedly does not play a leading role.

Participants in the press conference noted that the conference in Vienna cannot be considered as the completion of work to study the consequences of the accident at the Chernobyl AES. It is essential to continue work in that direction, while the results of research should be submitted openly to the people who have suffered.

Ukraine Supreme Soviet Plans Protest to IAEA

*OW0606082891 Moscow INTERFAX in English
1800 GMT 5 Jun 91*

[Text] The Ukrainian Supreme Soviet has instructed its commission in charge of the elimination of Chernobyl's effects to draft an official protest and send it to the International Atomic Energy Agency [IAEA] on behalf of the republic's parliament.

The commission head Vladimir Yavorivskiy described as "untrue" the conclusion by IAEA experts that the Ukraine and Belorussia have overstated fourfold the radioactive contamination levels in the areas afflicted by the Chernobyl disaster. He said the disinformation circulated on a worldwide scale "results from the activity of the national atomic energy agencies which employed the IAEA experts."

Latvian Chernobyl Group Demands Compensation for Victims

*LD0306171591 Riga Radio Riga Network in Latvian
0900 GMT 3 Jun 91*

[Text] The Doma Square in Riga changed its appearance a little this morning. Three green tents have been put up there and posters testify that members of the Chernobyl Republic Union of Latvia have declared a hunger strike. Their demand is for the law of the USSR Supreme Soviet on the social security of citizens who suffered as a result of the Chernobyl disaster to be adopted also in Latvia. Item 6 of the law states that the republic supreme soviets must ensure additional social security norms for those who worked on eliminating the consequences of the Chernobyl accident; and 6,000 people from Latvia participated in the elimination of the consequences of the accident, 2,500 of them from Riga. Fifty-eight have already departed for the other world.

Unfortunately, to this day this USSR law has not been introduced in Latvia. It is true that on 29 May a session of the Council of Ministers, chaired by Ilmars Bisers, took place. A protocol was adopted there on the social security of those persons who suffered as a result of the Chernobyl accident. This, however, is only a protocol whose record shows that several questions must be worked out and must be submitted for examination by 15 June, and some by 1 July. But the Chernobyl men need pensions, housing, telephones, medicine, and many another things immediately. They have no time to wait, because some of them may depart for the other world any day. Unfortunately, this is the reality and, therefore, also this hunger strike in the Doma Square.

Voronezh Nuclear Power Station Declared Safe

*PM3005084491 Moscow IZVESTIYA in Russian
28 May 91 Union Edition p 1*

[Unattributed report from IZVESTIYA, RIA, TASS, POSTFACTUM, REUTER roundup: "IAEA Mission to Novo-Voronezhskiy Nuclear Power Station"]

[Text] The IAEA mission which has checked the operational safety of the third and fourth power units at the Novo-Voronezhskiy Nuclear Electric Power Station confirmed their high degree of reliability. In the opinion of Bernard Thomas, leader of the group of experts, the number of insignificant so-called "incidents" at the two first-generation reactors that have worked for a total of 40 reactor-years was the lowest in comparison with similar installations in Europe. Moreover, none of the "incidents" went beyond the production area and all were rated at the lowest point on the international scale, IZVESTIYA correspondent V. Mirolevich reported.

Dimitrovgrad Nuclear Power Research Station Viewed

PM3105090091 Moscow Central Television Second Program Network in Russian 1415 GMT 23 May 91

[From the "Nuclear Power Stations Without Emotion?" program: Report by G.K. Kirillova, identified by caption]

[Excerpts] [Passage omitted comprising vox pop interviews, introduction by Kirillova. Video begins after approximately 2 minutes 47 seconds elapsed time with panning shot of exterior of building]

[Kirillova] Our program was recorded in the city of Dimitrovgrad, where the Nuclear Reactor Scientific Research Institute [NIIAR] has been based for more than 30 years. Founded on the initiative of Academician Kurchatov, the Dimitrovgrad NIIAR is one of the country's most important nuclear centers. [Video shows control room] Situated here are large research and power-generating nuclear reactors, scientific and engineering subunits, and a basis for training skilled personnel. [Video ends with shot of roundtable discussion. Passage omitted comprising roundtable with NIIAR scientists, vox pop interviews. Video restarts after approximately 18 minutes 28 seconds elapsed time with shot of the control room]

[Unidentified engineer] You are sitting at the console controlling the BOR-60 reactor. At the moment our installation is operating at capacity. Its current capacity is approximately 10 megawatts. Our current task is to raise that capacity. And a continuous process aimed at doing just that is currently under way. Well, what else can I say? There are three people working here—the shift chief, the senior engineer [indicates himself], and the control engineer. Our reactor is controlled automatically. So our job is to monitor the installation's parameters and, if necessary, override the automatic system.

[Kirillova] How are things going today?

[Unidentified engineer] As normal, no emergencies.

[Kirillova] And are there ever any emergencies?

[Unidentified engineer] Hardly ever. Well, what do you mean by "emergency"? Yesterday we had an unplanned reactor shutdown. That happened yesterday. For the reason that Substation No. 1 cut off electricity supplies to us. The emergency safety devices cut in and the reactor was shut down. We should have been working steadily at regular capacity [na statsionarnom urovne moshchnosti] right now, but because of this unplanned shutdown—and it wasn't our fault anyway—we'll have to raise reactor capacity again and upgrade our resources.

[Kirillova] Has this happened before?

[Unidentified engineer] Very rarely.

[Kirillova] And what are the consequences?

[Unidentified engineer] We just have to shut down the reactor. Nothing more than that.

[Kirillova] How reliable are your controls?

[Unidentified engineer] What can I tell you? Each of our parameters—the most important parameters for the installation—are controlled as a rule by at least three instruments. If one breaks down there are still two left. So we have triple control, so to speak.

[Kirillova] How dangerous is it to work here?

[Unidentified engineer] What can I say? I don't think it's dangerous working here at all. How can you compare different levels of risk? Pilots have a dangerous job, miners have a dangerous job, lathe operators have a dangerous job. How do you make the comparison? For instance, you go to see your family or friends and acquaintances and they keep saying: "You've had some kind of discharge or pollution there at the NIIAR." Well I for one have never known anything like that to happen here. I've been working here 10 years and there's hardly been any occasion of an unplanned discharge here. We each have an individual dosimeter. This piece of film registers neutron, gamma, and beta radiation. Once every three months a special laboratory checks to see how much people have picked up during the process of working. But these are for use if we're working under normal conditions. If there is any need to enter any contaminated areas or boxes [boksy], we take different dosimeters—special dosimeters for specific purposes which allow you to see at any time just what dose a person has received. They let you monitor things as you go along.

[Kirillova] The reactor's literally just on the other side of that wall?

[Unidentified engineer] On the other side of three walls, so to speak. If something does not go according to plan, a buzzer goes off. This is what it sounds like. For instance, if there is a discrepancy in the parameters, a buzzer goes off like that. And a light flashes—see it? This means that there has been some kind of deviation from the parameters. But that's just me switching on the alarms to show you.

[Kirillova] Is that an alarm just for those here or for everyone connected with the station?

[Unidentified engineer] It's an alarm for those here—so that we can quickly intervene.

[Kirillova] Is there an alarm for the station?

[Unidentified engineer] The alarm for the station is just a loud relay of this alarm. And we have a siren too. If suddenly... [changes thought] Well, suppose we had a radiation emergency, we could switch on the siren.

[Kirillova] Does your wife not mind you working here?

[Unidentified engineer] You'd do better to ask the wife. I don't think she minds. [Video ends with shot of old man being interviewed. Passage omitted comprising roundtable with NIIAR scientists, vox pop interviews. Video restarts after approximately 26 minutes and 56 seconds elapsed time with a shot of a radiation danger symbol]

[Kirillova] Naturally, it's impossible to look inside the reactor itself. But we can look at a model.

[A.S. Korolkov, chief engineer, identified by caption] You can see what the reactor itself looks like from this model. It's a container with thick double steel walls. The walls are 30 mm thick. Within the vessel is the core. This is the area where the fuel is located, where nuclear fission of the uranium takes place, and where the thermal energy is obtained. The core is composed of fuel elements—a full-scale mockup of which you can see here. The scale is life size. This is a cutaway model of the nuclear station. This is where the reactor I was talking about is located. It is enclosed by a radiation shield comprising layers of steel, cast iron, and concrete. Additionally, the top of the reactor is shielded by a heavy steel plate. In theory this plate can withstand the impact of a plane crash. The heat from the reactor is carried away by sodium along a hermetically sealed pipe. There's also a second auxiliary sodium circuit, and a third circuit carrying the water. With the help of special equipment called steam generators the water is turned into steam which is used in steam turbines produced by our industry. This part of the station houses the so-called transport technology system. What is this? The fuel elements which I've already mentioned are used up in the reactor and have to be periodically replaced. This system exists to remove spent elements and replace them with new fuel. Special means of transport are used for this purpose. They remove the fuel from the reactor and place it in special sealed steel containers. These are sent to temporary depots where they are stored before being sent for re-processing. I must say that all these transport technology systems are sealed and do not have any contact with the environment. That's to say that any contact with the atmosphere that could lead to pollution is actually ruled out. [Video shows unidentified man]

[Kirillova] What's your opinion—is our population sufficiently well-informed about what to do, if necessary?

[Unidentified man] No, absolutely not. We've gotten used to everything being done for show. And if we do take some measures in place, they're most often just for effect. Big shots come and visit, and they have to be shown everything and given a good reception. They just do this for show. But people don't really have the information or know what to do to protect themselves properly from radiation. [Video shows unidentified woman]

[Unidentified woman] I actually felt ill when they had discharges [sybrosy]. There've been some big discharges.

There were big ones in February and March. I had less energy and was short of breath. I had a very bad throat.

[Kirillova] And you're sure it's linked with that?

[Unidentified woman] Of course I am

[Kirillova] And why are you?

[Unidentified woman] Because I went to the doctor about it. (In other words, I haven't forgotten.)

[Kirillova] What about the population? Are they kept up to date about what to do if anything should happen?

[Unidentified woman] Nobody's told us anything about what would happen, what we ought to do, or how we would be evacuated if there was an accident. Nobody's told us anything about it. We know absolutely nothing about it.

[Kirillova] What about geiger counters? Do you know anything about them?

[Unidentified woman] No. We know nothing.

[Kirillova] Do your neighbors?

[Unidentified woman] No, none of us know anything. We only know... [changes thought] Of course, not even the newspapers tell you the truth about how much pollution there's been or how many large discharges. We only know from conversations how many large discharges there have been. We were once told it had happened 29 times... On another occasion we were told it had happened 16 times... that radiation levels were exceeded.

[Kirillova] That's rumor, right?

[Unidentified woman] Right. But the papers say everything's normal. They always say everything's normal. They say that they did have some discharges and that apparently somebody got punished. But what's the point of punishing somebody? We have to make sure it doesn't happen. When people have already been contaminated it makes no difference if you punish someone or not. That won't help. We have to think about these things beforehand. [Video ends with shot of unidentified man being interviewed in the street. Passage omitted comprising vox pop interviews, roundtable discussion. Video restarts after approximately 33 minutes and 55 seconds elapsed time with shot of doors opening]

[Kirillova] Little by little the secrets of the nuclear world are being revealed. For the first time a film crew has obtained pictures of the place where spent material is buried. NIIAR workers call this building the "burial ground." Steel or cast iron containers covered with stainless steel are brought here by special refuse vehicles. They are released through a hatch into cavernous concrete tanks. The hatch is immediately closed off by a thick plate acting as a plug. The vehicles are accompanied by a radiation specialist to make sure that the wheels have not become contaminated. We were told

that this area has the highest background radiation. But to make things clearer they made the comparison that this background radiation is equal to that produced by two working color TV's. [Video shows unidentified man from roundtable discussion]

[Unidentified man] There are special radiation monitoring [dozimetricheskiy] services at all the institute's buildings which measure the radiation in all areas, including at installations, any processes or systems, and so forth. And, naturally, we measure the radiation on the institute's territory and over a monitored area including Ulyanovsk itself. That's the extent of our coverage. We have a number of instruments for this purpose, including the stationary SRP [scintillation radiation meter] instrument. Let me show you. It's currently switched on and measuring the background radiation from that very wall where our main reactor vessel is located. And if we now look at the 30 scale—the lower scale—we can see that it's currently registering around eight to nine microroentgens per hour. This is in the very building where the reactor is located. Here is a map—admittedly from 29 March, there's a new one out in the corridor. The yellow squares indicate the figures for background radiation on the institute's territory. Have a look: Mainly it's five, six, or 10 microroentgens per hour—the same level as we have here. It's only in two or three places—the burial ground storage center and the place where we store the fuel elements—that the figure is 30, 40, or more microroentgens per hour. [Video ends with shot of wall chart. Passage omitted comprising geiger counter demonstration, interviews with doctors, vox pop interviews]

Report Claims Enriched Nuclear Material 'Dumped' in Tomsk

LD2705164391

[Editorial Report] Moscow Radio Rossi Network in Russian at 1110 GMT on 27 May broadcasts an 8-minute report from Tomsk by correspondent Boris Nekrasov. The correspondent begins his report by noting that Tomsk is where the Siberian Chemical Combine's Tomsk-7, one of the first of the nuclear industry's enterprises, is situated. He goes on to state that the old reactors are coming to the end of their life and are being closed down, but there are two replacement projects. One is an agreement with a French firm to reprocess raw uranium, and the other is a plan to build a nuclear heating plant, which has already been turned down by a number of other Soviet towns.

Nekrasov then interviews Anatoliy Vasilyevich Stryapchin, who says that he has worked for 30 years at the Tomsk Chemical Combine. He says he saw how the bosses dumped several tons of enriched atomic material into the reservoir. He says that in 1968 he sent letters to the CPSU Central Committee about the whitewash and deception going on at the combine. Departmental and local commissions were set up, but the measures adopted were purely formal, and they falsified the figures for the amount of material dumped

Stryapchin goes on to say that measures taken in the Ukraine and other areas after Chernobyl to prevent the construction of nuclear enterprises have made the ministry turn to Siberia. He says that studies need to be done in the behavior of highly enriched nuclear materials in reservoirs, and to get the Siberian Chemical Complex and its surrounding areas up to international safety norms, which will take a long time. It is time, he says, for glasnost about the whitewashes and deception practised over the dumped nuclear material.

Radio Rossi presenter Igor Vasilkov then comments on this report. He says:

"They say that when Nikolay Ivanovich Ryzhkov was chairman of the USSR Council of Ministers and heard about the circumstances of the accident at Chernobyl and the level of Soviet power engineering in 1986, he was very surprised, and said something to this effect: This was a planned accident, to judge by the state of our power engineering.

"Actually when he took this responsible office, Nikolay Ivanovich was very often surprised by things that happened in our country. But we today are not surprised that Nikolay Ivanovich has put forward his candidacy for the post of president of the Russian Federation. Such is ecology, such is life!"

Bashkiria Denies Nuclear Waste To Be Buried

LD0106095591 Moscow All-Union Radio Mayak Network in Russian 0900 GMT 1 Jun 91

[Text] The Council of Ministers of the Bashkiria Soviet Socialist Republic has officially denied rumors about supposed plans to bury radioactive waste from the nuclear industry on the territory of the republic's Beloretskiy Rayon. This denial was prompted by discussion in the republican press and at meetings and assemblies, which has been worrying the population of Bashkiria. The Bashkir Council of Ministers has given assurances that no nuclear industrial waste is being buried on the republic's territory, nor will it be buried there.

This was a report from the POSTFAKTUM agency.

Radiation Concerns in Chelyabinsk-65 Research Center Examined

91WN0448A Moscow SOVETSKAYA ROSSIYA in Russian 20 Apr 91 First Edition p 6

[Article by SOVETSKAYA ROSSIYA correspondent L. Leonov, Chelyabinsk-65: "A Measure of Secrecy: the Today and Tomorrow of a 'Closed City'"]

[Text] "Sometimes people dream of the blue cities... Who does not remember the songs about the new cities—Ust-Ilim, Bratsk, Strezhevoy? But a good ten or so of the new projects from those years do not appear on any map, even the most detailed ones. They truly have no names, although they have existed for decades.

These are the "atomic cities." Soviet atomic weapons were built here in a terrible hurry and with unprecedented intensity. One such city lies 100 kilometers from Chelyabinsk, at Lake Irtyash.

The residents themselves call it simply the "city," sometimes "our city." Others know it more by its postal code, at first "Chelyabinsk-40" and now "Chelyabinsk-65." The official name, Ozersk, which was established in 1954, did not take hold, although it reflects the characteristics of this swampy lake district.

The old part of the city with its small standard wooden cottages and two-story detached stone houses is almost in the forest. But the city also has its new suburban areas containing nine-storey buildings on the shores of the Irtyash with mountain views.

The discussion about good and evil is the keynote in all the articles published about "the ban." The city and the Mayak Chemical Combine, which is located here, did not manage to "open up a bit" as they should have and ended up in the thick of a political struggle which is dividing society.

"Isolation from the world did not work to the advantage of the atomic cities. Despite all the good quality construction, they produce an impression of not being cared for, of profound provincialism and neglect," one Moscow guest wrote in a magazine after a trip he had taken there.

And this is about the city which was the first in the Southern Urals to receive television and which after the war had a symphony orchestra, something which the oblast center still does not have. The city has a working theater and music school, as well as more doctors of science per square meter than Moscow University. But there you have it: "provincialism" and "neglect."

In the city a correspondent came across a preschool complex called "Zhemchuzhina" (Pearl), which any capital might envy: it had computer classrooms, a swimming pool and a winter garden. But the correspondent brushed it aside: "Although all this, undoubtedly, is done for the children, what comes across is an element of show, which previously was universally accepted among us but now exists only in special preserves." The residents of the "preserve"—we shall leave this little word on the conscience of A. Guber from NOVOYE VREMYA—find it incomprehensible and offensive: why does a person see white and write black?

And how these "democratic" journalists get things twisted when they try to deal with more complex questions! Questions such as these: why do the restrictive conditions still exist; why is the restriction on the city not removed? How should the activities of the Mayak Chemical Combine over four decades be judged, and does it have a future? Should a nuclear electric power station [AES] be built next to the combine?

The questions are many, and they are controversial and very complex. But the answers which they try to give to them are primitive to an offensive degree.

Take secrecy, "secret-mania." Of course, the city's present regime of secrecy is not determined by a desire to eat one's fill of chocolate in secret—it has not been available anywhere for a long time. But special conditions are present here. Have accidental or intentional acts to destroy the nuclear installations—under conditions of free access—been ruled out?

Today the source of radioactivity has been separated from the main production unit by a triple fence with a monitoring strip around it. Along with the industrial complex, it is isolated from the city by still another barrier, and then it is cordoned off with the city as well. Triple protection.

But will the city be open? In the first place, a protective zone will have to be built around the unenclosed radioactive bodies of waters—this will cost 20-25 million rubles. In the second place, this winter for the first time in decades Lake Kyzyltash froze. Five military reactors were shut down. The waters from a non-freezing lake were cooling them, but they themselves began to heat up. In these hothouse conditions the fish began to grow to unbelievable sizes. The lake is swarming with fish, but they cannot be eaten. And who will guarantee that some enterprising members of a cooperative will not begin to sell these "gifts" of Kyzyltash in Chelyabinsk or Sverdlovsk if they open up the city?

I agree that there is secrecy and there is secrecy. As in everything, moderation is necessary here. At one time they did not even permit people to change their last names when they got married. It is absurd that now, when Japanese and Americans come to visit, the floorlady at the hotel can see her granddaughter only once every three years.

"However, the capitalist masters are keeping their secrets," noted V. Fetisov, the director of Mayak. "We know this and do not intend to bare our entire soul to the first passerby. But questions of contact between employees and their relatives I decide positively. Given all the shortages, this is the one thing which the director of the combine can permit himself."

In its first years the combine had a "Blue Book" describing the manufacturing process for separating plutonium from uranium. One was allowed to read it in a special office and only that section which one needed. The book contained no stolen American secrets; on the contrary, our secrets were hidden in it. Uranium was called "product-9," alpha radiation was called the "first expenditure," radioactive fragments were called "dew," and so on.

It is difficult to say how much we held up the development of science and technology by this Aesopian language, but I would like to describe one loss, which the non-specialist can understand.

Today they drink their own milk in the city and they eat their own cottage cheese and vegetables. Thus the atomic workers are not completely the parasites that some people love to depict them as being. The Mayak Workers Supply Administration has two sovkhozes. They are located at a considerable distance, over 100 kilometers away. The combine received them in a terrible state and revived them in a short period of time. And how it revived them! The live weight production cost of beef at the sovkhozes is 2 rubles 22 kopecks per kilogram. They get 3,800 kg of milk from each cow, which is much more than the average indicator for the oblast. They obtain 26 centners of grain on average. The city residents participate in agricultural work as the main labor force; they do not have to be "prodded" into the fields. They understand that what they harvest is what they will eat.

Their experience is interesting but little studied due to the secrecy. And that is a pity.

Yes, Mayak left a hemorrhaging, or to put it more accurately a noiselessly mutilating radioactive trail on the Urals landscape. In 1957 there took place what the people called the "northern lights over Kyshtym" (Kyshtym is an ancient city not far from Mayak). One of 16 storage facilities for liquid radionuclides exploded, and a narrow radioactive trail, like a sword, contaminated the soil and water over dozens of kilometers to the east of the combine. In the 1967 drought the bank of the radioactive Karachay became bare, and wind scattered the dangerous dust. About half a million people suffered in one way or another from these catastrophes. Due to the secrecy many people did not even know that they were at risk. They were not warned.

The ecological situation which exists today in the area around the Mayak Combine arouses concern. And will the waters of the Karachay, which is now being filled in, suddenly penetrate the water-supply system? Nor are they hiding from people the danger that during the spring flooding the contaminated bodies of water may one day overflow and rush into the Techa River.

"But who was to know that it would turn out this way?" asks A. Suslov, the chief engineer at Mayak. We were counting on the river water to dilute the concentration of radionuclides to a safe level. But we did not take into account, we simply did not know, that the radioactivity would be swallowed up by the bottom silt, that it would bind up and concentrate (rather than dilute) two million curies of radioactivity in the upper course of the river. The academicians of those times knew as much about the atom as ninth-graders do today.

The community was poorly informed about a similar mistake which was made before us by the Americans. Having built their gigantic plants in Hanford, they dumped radioactive water into the powerful Columbia River, which is comparable to our Volga. Jean-Francois Ogero, a journalist who visited Mayak wrote in the French newspaper LE MONDE: "In America, which did not by any means display a model attitude toward the

environment in the 40's and 50's, similar problems have now arisen in the areas where military nuclear centers are located, as for example at Hanford, which the entire world press wrote about recently."

Our community was not told what the world press was writing. Nor was it told that the ecological protection of atomic factories is a worldwide problem. The Techa incident is being significantly inflated. And, naturally, the CPSU is the culprit in all of it.

Newlyweds bring flowers to the Kurchatov monument near the Mayak administration building while a journalist from IZVESTIYA notes with irony: a family begins with a gesture of recognition to the creator of the atom bomb.

But is the blood from the surgeon's scalpel, for example, really his "output?" No, his "output" is the person's health. In the same way Mayak's output is not plutonium for a bomb, nor is it radioactive waste. Mayak's output is peace. And it has been for nearly half a century now. And who will undertake to determine the price of peace? In rubles? In dollars? In human lives? For the peaceful day of 9 May the country placed on the altar of victory tens of millions of her sons and daughters.

Somehow my fellow countrymen who now revile the chemical combine have forgotten too easily that the list of first atomic-bomb targets in our country includes Chelyabinsk.

"It is sad, but a fact that we seriously underestimated the Russians' potential," wrote R. Lapp, one of the creators of the American bomb, as long ago as 1953, "because we wanted to push farther into the future the time when we would have to worry about the Russian atomic bomb."

It is they, who are now despised, the well-known and the unknown Mayak workers, alive and dead, who forced them to worry about the Russian bomb. But now everything is being presented in such a distorted way!

"The chemical combine is sucking out our intellectual forces..." And, after all, Mayak did in fact become the nuclear specialists' largest factory in the entire country, with the best personnel; that is recognized universally. And they began from scratch. The intellectual forces were sucked out by the war, and then by another war—the internal one. It was ordinary women, who had not gone to university, who, figuratively speaking, held the first plutonium in their hands, women like L. Sokhina, who subsequently became a doctor of chemical sciences.

I was at the Karachay and got to talking with V. Svezhentsev, the driver of a lead-protected KrAZ (Kremchug Automobile Plant) vehicle. For 12 years he has been filling in this terrible lake. He has a dosimeter attached to his white jacket. "It takes" two REMs every year. His pay is 220 per month. In the summer he struggles to breathe in the heat of the unventilated lead cab. He says simply: "And who except us is going to bury this contamination?"

And, indeed, Mayak was left face to face with trouble. In September of last year the RSFSR Supreme Soviet examined the radio-ecological condition of the republic and appropriated a billion rubles to those who had suffered. But Chelyabinsk Oblast was not even mentioned in that document.

And those who demand that Mayak be strangled, is that how they understand the situation?

Construction of the AES was blocked at the insistence of public opinion in the oblast. It was intended to be part of the complex with Mayak, completing the chain of atomic transformations into peaceful electrical energy. And the oblast has an enormous shortage of power. But the referendum held recently in Chelyabinsk said "no" to the atomic power station.

They saw in the AES above all a way for the military industrial complex to protect itself and retain its personnel, etc. And indeed, it was difficult for the combine after the five defense reactors were shut down. But it overcame these difficulties. Not a single specialist was laid off. Moreover, the combine now has about 500 vacancies. The conversion process is expanding. And it did not begin today or even yesterday but as long ago as 1962, when the isotope plant was started up. Fiber optics, radiation monitoring equipment, permanent batteries for an "artificial heart," new materials and stronger plastics—that is only a partial list of conversion products. Last year they provided the combine with a million dollars.

Thus the AES is not at all a means for survival. It is, as the specialists claim, a set of complex technical questions which are absolutely essential for improving the ecological situation.

The catastrophe at Chernobyl, it seems, has taught us all a bitter lesson: irresponsibility and the atom are incompatible. Why do I say this? At Mayak they are already racking their brains over whether there will be enough atomic sources of electrical power to restrain the atomic nether world if, as a result of the miners strike, a heat and electric power station is shut down. One unit of it has already been turned off due to a lack of fuel.

I will not begin to decide the fate of the AES, but I share the concern which the city residents express about the speculation surrounding Mayak and the AES. The political aspect of the criticism aimed at the atomic workers comes through clearly. The critics turned the technical problems concerning the safety of the new BN-800 reactor into a platitude first of ecological problems and then of social problems (with regard to the undeserved benefits of the "restriction"), and later they tried to add a nationalistic slant. Does it need to be said how much this juggling, mud-slinging and these open lies disturb the city residents, the current and retired employees of Mayak? This is not what the residents of the unknown cities deserve.

Participant Recounts 1954 Totskoye Nuclear Test

91WNO448B Moscow VETERAN in Russian No 17
Apr 91 p 14

[Article by Retired Colonel I. Krivoy: "A Time to Scatter Stones"; first two paragraphs are source introduction]

[Text]Today glasnost is entering all areas of our country's life and history. Recently journalists have devoted a number of articles to the tactical nuclear exercises carried out at the Totskoye test site in 1954 (IZVESTIYA, No 288, 1989 and No 5, 1990; TRUD, No 2, 1991). The articles contained quite a few critical comments directed against the organizers of the tests—the military personnel who caused, in the authors' opinion, significant damage to the health and life of the Soviet people and to our natural heritage (one of the articles was called "Hiroshima of the Urals").

Retired Colonel I. Krivoy, who participated directly in the events which took place in the Totskiy Rayon, responded to the articles. He disagreed with much of what was printed. By way of encouraging pluralism in opinions we offer his reflections for our readers.

Everything that has been written up to now about the Totskoye tests is extremely disappointing. Alas, it is as if some kind of jarring note had been assigned to the materials from the very beginning. The tendentious titles immediately attune the reader to something negative, something criminal. Perhaps the most scathing article appeared in the newspaper TRUD; it more or less puts an equal sign between the barbaric nuclear strike against Hiroshima by the Americans and our tests, which pursued, one may say, a completely different end.

The United States inflicted an atomic strike against a peaceful Japanese city in order to erase it from the face of the earth, to destroy hundreds of thousands of defenseless people and to frighten the world, especially the Soviet Union, with its military might. The Soviet testers, in scientific terminology, "were searching for ways to provide maximum protection for all living things against the destructive factors of nuclear weapons in diverse terrain conditions." And consequently, the Totskoye tests served as a shield from any potential Hiroshimas. The powerful blast scattered the rocks, sand and earth of Totskiy Rayon for the sake of the future creative work of mankind. To me, a front-line soldier, who passed through the crucible of many severe tests—through fire, death and destruction—who was six times wounded (I know the cost of life!), this was as clear as God's day.

And how did all this take place?

In 1954 I was serving in a motorized infantry division, deployed not far from the Totskoye test range. My position was deputy chief of headquarters for the division; at the test I was, by the order of Marshal of the

Soviet Union G.K. Zhukov, the acting chief of headquarters. In keeping with my position I had information on the preparations for and conduct of the tests.

I first learned about the forthcoming event in February of 1954, when a group of officers and generals came from Moscow for reconnaissance of the test area. If February is taken as the start of the countdown, then the preparations took seven months. Everything was carefully thought out, calculated and weighed. Particular attention was paid to measures for the safety of both the test participants and the public. G.K. Zhukov, marshal of the Soviet Union and USSR deputy minister of defense, directed all the preparatory work as well as the tests. He personally conducted command-post exercises with the headquarters of every division participating in the tests, and with the troops he held two training sessions and a general rehearsal.

The test area was very carefully prepared from an engineering standpoint. Our division, as a defender in the assault echelon, joined the endeavor in the spring. The engineering work was carried out mainly in the area of the nuclear explosion.

For visual targeting by the aircraft they marked out a square 100 by 100 meters in the epicenter, and they filled in its sides with a layer of chalk up to 10 meters in width. They put up three large corner deflectors within the square for radar sighting in the event of cloudy weather.

The epicenter of the explosion was named the "bath house," because a bath house had actually been located on this site when the Polish Army was being formed during the Great Patriotic War. No cross-shaped trenches were dug. In the epicenter nuclear explosions were not simulated (this was done in other places), and barrels of black oil were not set on fire.

The crew of the aircraft which dropped the atomic bomb made several practice runs under various weather conditions, dropping concrete blanks at the square.

They built around the epicenter a defended area, which was occupied by a military subdivision provided with the latest equipment. They built field works and permanent installations, individual elements of houses and other structures and administration facilities with means of communication. In addition, fighting equipment and animals were placed at various distances (under cover and in open areas).

It was mainly military formations from the Belorussian and Southern Urals Military Districts which took part in the tests. The personnel were told at the very beginning that they would be using the atomic bomb in these tests (TRUD misleads its readers on this subject). In our division four people refused to participate in the action and they were released.

All the personnel were supplied with protective gear which was the latest available at that time. On the day of the test nearby villages located within a radius of 25

kilometers were supplied with motorized transport and instructions that in the event that a nuclear cloud moved above them it was necessary to evacuate people from the danger zone quickly.

They took months to prepare the ground and not days, as V. Karpov writes on this subject in TRUD. The following were dug: a whole range of trenches with diverse sheathing and covered areas, pits for tanks and other materiel, shelters, bunkers, earth-and-timber emplacements and other fieldworks which provided complete shelter and protection against an atomic blast. Military hospitals were opened in the test area, and personnel went to them for medical checks both before and after the test.

On 13 September 1954, on the eve of the action, our division left the defensive zone in the forward area and moved a safe distance to the village of Klyuchevoy, which is not five but 10 kilometers from the epicenter of the explosion. Before the bomb was dropped the countdown was announced over a loudspeaker: all personnel from our division were in previously-prepared open trenches.

At 9:00 (and not at 9:30, as V. Bentsianov reports in IZVESTIYA) in the morning on 14 September 1954 an atomic bomb was dropped from an airplane. The effect of the explosion has already been described—there is no need to repeat. As the shock wave spread in the sky it was visible in the form of a white circle, which rapidly expanded from the center of the explosion, like a wave that spreads on the surface of the water when a stone is thrown, and a front of raised dust moved along the earth. As soon as the seriously weakened shock wave in the form of a strong wind passed the area in which our division was located, a signal was given and we took our places in our vehicles and fighting equipment. With maximum speed we headed for our positions and in 40-50 minutes we had occupied them.

All the vehicles and other fighting equipment immediately started and got under way. V. Karpov's claim that after the explosion the running gear of the tanks, which were 12 kilometers from the epicenter, was squeezed by the earth as if by a vice, and that the tanks had to be pulled out by towing equipment, is, to put it mildly, a serious exaggeration.

No atomic snow or nuclear ash fell on the heads of the test participants or local population.

After the shock wave had passed through the artillery's fire positions, preparations for the attack of the "Southerners" began, and when the "Northerners" had taken up their positions in the defense, up to 100 bombers under cover of several dozen fighter planes inflicted a bomb strike against the defense of the "Northerners" (in areas, of course, where there were no people; dummies were used instead).

In the areas where the defender subdivisions were located there was no radioactive contamination of the

ground, but all personnel were in the prescribed protective gear and were categorically forbidden to remove it unless so ordered. I served in the formation until 1960 and did not hear of anyone from that unit who complained of illness related to participation in the Totskoye events.

When the "Southerners" switched to the offensive and approached the epicenter, the levels of radiation there were no longer dangerous. Incidentally, there was not a single village along the route followed by the troops who went through the epicenter. As is well known, no one builds villages on test sites (to the information of Comrade V. Bentsianov).

Beyond the firing range several villages burned down, but the people in them were evacuated in good time with all their property to other settled areas. The villages had natural, non-dangerous radiation levels. After the test, the burned-out villages were completely rebuilt—at state expense—at a considerable distance from the test site. I saw the rebuilt villages with my own eyes.

The test took place in an extremely organized manner: there was not a single emergency during the course of it.

Because this nuclear explosion was an aerial one, the column of dust which rose from the earth did not join up with the radioactive cloud: in the places where the dust fell, radioactivity was absent, and it was insignificant in the trail of the radioactive cloud. After a short period of time natural decontamination of the locality took place.

I cannot say what happened in other divisions but in ours no one asked us to sign non-disclosure statements with regard to data about the test, and no one forbade us to go to a physician to check on radiation exposure. And, by the way, no physician would require a patient to reveal a state secret.

I would not claim that no one suffered anything at all from the test. I do not know everything about it. For this reason I share the opinion of Mladen Zhivoyovich Markovich, referred to in *IZVESTIYA*, that although it hardly makes sense to equate all the veterans of the Totskoye tests with those who participated in the Great Patriotic War or in combat actions, nonetheless, if some of them suffered, then they deserve no fewer benefits and no less concern from the state.

For myself, however, I can say that I visited by car, without protective gear, the epicenter of the explosion 24 hours after the blast; I examined the area, the twisted and destroyed equipment and field works, and to this day I do not feel that it has in any way influenced my health.

I visited the site of the explosion more than once after the test. The square which was marked in chalk lasted for three or four years. The vegetation appeared the following year, and according to dosimeter monitoring reports, radiation was not present there.

The participants in the test—from soldier to general—displayed (alas, it is not considered acceptable to talk about this now) great patriotism, enthusiasm and effort. Then, in 1954, it was as if people did not think about danger. They thought about how best to fulfill the mission of the Motherland.

For that reason it is offensive to read today articles with a "double bottom," articles which simply paint the Totskoye tests as all black. When you read, for example, a sentence such as this one: "The residents, thank God, were sent away before the explosion," what suggests itself is this: "It is good that the military at least had the wit to do that," or "Is it really accidental that they chose a densely-settled area as the site of the explosion? Is it really accidental that they removed only the residents of the closest villages?" It is clear that the subtext contains the conclusion they they turned the local population into experimental rabbits.

Even the famous leader G.K. Zhukov gets it in the neck from today's sharp journalists. As a leader, they write, he too was a fine one: he hid in a concrete observation point while subjecting the troops and public to mortal danger. By the way, after the bomb test Georgiy Konstantinovich [Zhukov] rode through the epicenter of the nuclear explosion in a car.

Almost everything that our generation did is being slandered or ridiculed today by the "democratic" press. We did not work right and we fought poorly, or we destroyed each other if not in camps then with a nuclear bomb. Society and the generations are being split into hostile factions. The question arises by itself: whom does this benefit?

Environment Minister on Local-National Conflicts Over Preservation Areas

91WN0467B Moscow *IZVESTIYA* in Russian
9 May 91 Union Edition p 8

[Article by *IZVESTIYA* special correspondent V. Remizov: "Reporting With Partiality: Poachers in the Law"]

[Text] New life has come to the country's preserves. Forest rangers and scientists, having put aside their customary activities, are defending themselves against the local authorities who have nowhere to graze goats, cows, and reindeer... The logic of the preserves is that they are specially protected territories—the golden reserve of the state, an all-national treasure. The logic of the local authorities is: We live here, and that means all these birds, fish, animals, and the land are ours. Long live sovereignty!

It is curious that the local authorities act according to a single scenario. Without agreeing amongst each other. The geography—the Caucasus, Bashkiria, Tuva, and Turkmenia—is very broad, and plays no significance. A classic example may be the history of the Baykal-Lensk Preserve

According to the testimony of Baykal specialist Oleg Gusev, the Baykal-Lensk Preserve was created just in time. It has protected against destructive activity the last Baykal territory which had remained untouched practically since Paleolithic times. There were 15 species of animals and plants in the preserve lands which were listed in the USSR Red Book [endangered species list]. In four years of preserve conditions, there has been a notable increase in red deer, roe, bears, and seals. Animals began appearing in open clearings, even in the daytime.

The problems began unexpectedly. The local authorities, who in 1985 had given the "go-ahead" for creation of the preserve, already in 1986 decided to rescind their "O.K.". The reasons for this? The official reason was that there was nowhere to graze the cattle. However, to be honest, we must say it was because the local hunters could not stand the thought of the animals peacefully wandering throughout the preserve. The dispute arose over three Baykal capes. Their area—only 377 hectares—has great significance for the cause of the preserve due to the special flora and fauna on these capes. To the epithets of scientists—"unique", "a relic", "the only one", "entered in the Red Book"—the chairman of the Kolkhoz imeni 20th Party Congress, who was supported by the Olkhonskiy Rayispolkom, presented his own epithets—"deciding the fate of the kolkhoz", "without the capes, the kolkhoz will have to be disbanded".

A special commission of the Irkutsk Oblispolkom investigating the conflict came to the unanimous conclusion that these lands (three percent of all the hay mowing areas) had no "decisive" importance for the kolkhoz cattle. It also stressed that the kolkhoz had received 36,000 rubles as compensation for the capes handed over to the game preserve. Moreover, its plan had been reduced by 5,000 head of cattle, and the kolkhoz workers could fish in the lake and hunt seals. Six members of the commission spoke out in favor of retaining the preserve in its established limits, and one voted against.

It would seem that that would be the end of it, but alas... In 1990 the Olkhonskiy Rayon soviet elected a new chairman. And so, on 14 December of last year there were already 45 horses grazing on one of the capes. The basis for this was the resolution of the rayon session of people's deputies. As it turned out, this was a touchstone. In a week the village Soviet announced the resolution to graze 300 head of cattle on the capes. This means that aside from the destroyed capes, the road leading to them will also be stripped of grass—30 kilometers of Baykal mountain slopes in the preserve area.

Only after the emergency intervention of the oblast soviet chairman, V. Potapov, were the rayon authorities forced to bring their actions into line with the "Statute on preserves" and to admit that they were wrong... But will it be for long?

In describing this incident, we have touched upon only the main claims—the territorial ones. The suit is also

accompanied by other demands set forth by the local authorities. For example, they want the poor preserve to solve their socio-economic problems, and to develop new lands for the kolkhoz in the form of compensation. They want to be the ones to ratify the preserve officials...

We must pay the ecological commission and the leaders of the Irkutsk Oblast soviet their due in the resolution of this conflict. Having assumed the role of arbitrator, they have gotten to the bottom of the situation in all fairness, and in accordance with the law. If they had taken a slightly different position, the kolkhoz workers would have been left without prudent compensation, or the preserve would have incurred unrecoverable losses.

The Tuva authorities acted in a principally different manner. Having on their territory (17 million hectares) only one preserve, the "Azas" with an acre of 333,000 hectares, the republic's council of ministers resolved to cut the preserve by 53,000 hectares. This area was to be used for grazing kolkhoz reindeer. There is no sense in dwelling on this incident—it repeats exactly the "Baykal-Lensk" one, with the only difference being that the local authorities, sensing the support of their council of ministers (for example, the republic's minister of internal affairs himself personally went to investigate the decisive actions of the preserve director), act much more aggressively. Here too the absence of pasturelands is merely a clumsy excuse. The reason, however, lies elsewhere—the fact that sable, maral [Siberian stag], elk, roe, and Tuva beaver from the endangered species list have significantly increased within the boundaries of the preserve. And it would be alright if the local residents really did have nowhere else to hunt...

The end to the dramatic conflict around the "Azas" must be placed by the developer of the preserve—the RSFSR Council of Ministers, but no one knows when it will have time for this. The Tuva Council of Ministers, however, understanding perfectly well the illegality of its actions, insisted on removal of the "zealous" director of the preserve and the appointment of their own man. It insists also on the unquestioning fulfillment of its own (illegal!) resolution about handing over the preserve lands to the kolkhoz. How will all this end?

In the USSR Minpriroda [Ministry of Natural Resource Use and Environmental Protection] we were given the coordinates of still other hot spots. On the territory of the Caucasus Preserve the local authorities intend to hold the '98 Olympics. In the Krasnovodsk Preserve—they intend to fish, hunt, and graze cattle. The Bashkir Preserve has simply turned into a subsidiary farm of the local kolkhozes. Need we continue the list of examples of this national shame?

Commenting on the situation which has arisen, USSR Minister of Natural Resource Use and Environmental Protection Nikolay Vorontsov noted: Today we may freely speak of the epidemic of territorial claims by local authorities to the country's preserves. The roots of this illness are the same—a low cultural level of the local

leadership, and the inability to understand the true economic, ecological, and moral value of the preserved untouched nature—our most valuable resource. This is on one hand. On the other are the obvious breaches in the effective environmental protection legislation. According to it, our preserves differ in practically no way from registries, which is specifically what the authorities make use of.

The law on specially protected territories of the USSR, whose draft has long been finished, must be reviewed at the fall session of the USSR Supreme Soviet. It is absolutely necessary that this law be adopted, believes Nikolay Vorontsov. However, world experience shows that no law, not even the strictest law, will be able to protect our preserve lands if our attitude toward untouched nature does not change, if strict requirements are not set for the level of leaders in the center, the republics, and the local areas, and if the fate of the preserves is not under the constant and unselfish control of public organizations.

State Commission Official Urges Republic, Regional Environmental Cooperation

91WN04404 Moscow PRAVITELSTVENNYY
VESTNIK in Russian No 11, Mar 91 pp 8-9

[Article by A. Tsygankov, deputy chairman of the USSR State Commission on Emergency Situations: "We All Breathe the Same Air"]

[Text] A provisional ecological agreement between the republics on ecological problems requiring urgent coordinated action is being prepared. The need for such an agreement is obvious. The path which leads to it, however, is not easy.

The agreement, which is being worked on at the request of the Congress of USSR People's Deputies, should help to overcome the environmental crisis which is developing in many regions of the country. The long neglect of environmental-protection measures is, unfortunately, a wide-spread phenomenon in the center as well as in outlying areas.

A special working group of highly-skilled experts, including USSR people's deputies, was formed under the USSR State Commission on Emergency Situations to prepare the agreement on ecological problems. After careful study of the republics' sovereignty declarations, a draft agreement was prepared on the basis of proposals submitted by ministries, agencies and several Union republics.

What has gone into it? It has been proposed that the agreement should include the principle of implementing a unified ecological strategy and nature-management policy throughout the country and should recognize the reciprocal coordination of republic-level and Union-level legal and normative acts as a mandatory condition. The unity of the biosphere requires scrupulous consideration of all the possible types of influences on the

environment in order to resolve in a comprehensive manner the natural-protection tasks. It is also clear that if the Black and Azov seas are to remain alive, it is necessary for the Dnepr, the Dnestr and the Don, and the Kuban to supply them with clean water, beginning with the very upper reaches.

For the first time a high-level official document refers to ecological disaster zones (Chernobyl and the Aral area) and ecological emergency zones. Decisions on whether to declare an area part of an ecological disaster zone or of an ecological emergency zone are taken by the USSR presidium upon consideration of a proposal by one or more republics at the Council of the Federation. It is recognized as essential to introduce measures to compensate the population in the ecological disaster zones for the loss of health, through the formation of special funds; this applies especially to children, pregnant women and nursing mothers. It is planned to increase the work effectiveness of local environmental-protection organs by supplying them with modern equipment.

It is also essential to speed up the establishment of a unified system for the automated monitoring of the state of the environment, which would include the appropriate banks of ecological information. It is necessary to note that, despite the existing range of monitoring methods, which includes devices in outer space as well as on earth, modern systems have not yet not been established—not even for individual regions or major cities—to provide information necessary for making decisions on prevention. Systems of this kind are necessary in the Aral Sea zone, where it is possible to use equipment of the Baykonur Space Center, as well as for such major regions as the Donbass, where the monitoring of the water and air quality is of vital significance.

The draft agreement stipulates the reciprocal obligations of the center and the republics in preserving species and genetic diversity in the plant and animal world, including the development of a state program of scientific research and economic incentives to promote environmental-protection activities by enterprises.

It is recognized that international treaties adopted by the USSR in the area of environmental protection must be fulfilled by all the republics. It is emphasized that new international agreements, which deal with the natural resources of the republics, can be concluded only if there is advance consultation and coordination with the latter.

Because a thorough resolution of many problems of a regional nature depends largely on the republics, it is recommended that inter-republic agreements be prepared in the very near future, including agreements on the protection and restoration of natural resources in the basins of the Baltic, Black, Azov and Caspian Seas, the Dnepr River basin and Lake Baykal, as well as on the protection and rational utilization of water resources in the Aral Sea area. The establishment of an Inter-Republic Ecological Fund is planned; it will determine

the procedure for resolving disputes and paying compensation for losses resulting from violations of the environmental protection legislation.

The draft of the ecological agreement for the republics was presented for consideration by the Inter-Parliamentary Ecological Council, which gathered in Kishinev, but it was rejected ostensibly for not corresponding to the sovereignty declarations which the republics have adopted. However, a careful analysis of the document shows that in no way does it violate the basic articles of the declarations by the republics, which proclaim the natural resources to be the property of the people in those republics; in fact, it develops them further.

At the meeting the thesis was put forward that in order to carry out the Congress decisions it was necessary to adopt the Inter-Republic Ecological Agreement, the main practical result of which would be the formation of an Inter-Parliamentary Ecological Council with an executive organ in the form of USSR Goskompriroda [USSR State Environmental Protection Committee]. Judging by the draft, this legislative organ must be not only above the USSR government, but also above the governments of all the republics because the main environmental-protection decisions will be taken exclusively by this council. Careful examination reveals that what it is being proposed is a more centralized system than the one which they have already rejected.

The most substantial aspects—the material, technical and financial support for environmental protection measures—are not clear. It is proposed to have funds from which resources are allotted to the republics on the basis of mutual agreement. It is understood that the amount of money in these funds depends on the financial potential of the republics. At present nearly one billion rubles from the Union budget is being allocated for the resolution of the Aral problem; under the proposed system, this billion must be transferred to Russia, the Ukraine and Belorussia. And what about the Volga, the Dnepr and the Baltic Sea?

The council is interpreted as a parliamentary organ. Its main work will involve the consideration of materials at its sessions, at a time when for a majority of environmental protection problems it is already known what to do.

Great practical benefit would be obtained from the establishment of territorial economic formations (consortia, concerns, associations, joint-stock companies), which—once they had united the economic, scientific and technical potential of enterprises under the leadership of local councils, and once they had received possible financial assistance from the republics and the Union—would do everything possible to resolve ecological problems.

Today the draft of the provisional agreement has been distributed to the parliaments of the republics, and one

would like to believe that the pressing ecological needs will overcome the barriers which have been thought up.

Cause of Mass Illness at Moscow Chemical Institute Sought

LD3005170291 Moscow TASS in English 1627 GMT 30 May 91

[By TASS correspondent Eleonora Sutotskaya]

[Text] Moscow May 30 TASS—The state of 159 patients, hospitalized in the southwestern part of the Soviet capital a week ago, has been described as "satisfactory" by chief doctor Oleg Laptev of Moscow's medical and sanitary centre. A medical commission was to decide on their release from the centre on Thursday, he told TASS.

All 159 patients work at the Chemical Technology Research Institute and their sudden illness caused rumours to circulate in Moscow.

It all started a week ago, when doctors at the medical and sanitary centre reported that an unusually high number of people working at the Chemical Technology Research Institute had been granted sick leaves, all ill with quinsy, Laptev told TASS.

Most of those people had characteristic quinsy symptoms—a high temperature of up to 38-39 degrees centigrade, a sore throat and a splitting headache. But quinsy, unlike flu, never develops into an epidemic. Doctors wondered if diphtheria or some other infectious disease might be the culprit. To dispel doubts it was decided to hospitalize all the patients. A special department was set apart for them and the first patients were received on May 23, two days after they had fallen ill.

Now they were ready to leave the centre, the original diagnosis still recorded in their case histories, Laptev said. The situation seems to have stabilized. No new cases of the disease have yet been reported. But doctors are now examining everybody at the chemical technology research institute.

A special commission, consisting of toxicologists, chemists, hygienists and occupational pathologists, is now working to identify the source of the malady. According to Oleg Laptev, specialists have rejected the possibility of the outburst having been caused by infection or radiation. But they have not yet come up with another explanation of the strange "epidemic".

The Chemical Technology Research Institute shares premises with the Institute of Industrial Technologies, whose associated were also affected, Laptev said.

KGB Scotches Rumors of Radioactive Accidents Near Moscow

PM3005220591 Moscow SOVETSKAYA ROSSIYA in Russian 31 May 91 First Edition p 2

[M. Sashin report: "The Rumor Is That There Will Be No More Gossip..."]

[Text] Alas, don't even dream about this while officials or the mass media get involved in spreading information which, to put it mildly, does not correspond to reality. This thought was provoked when the editorial office became snowed under with telephone calls from Moscow and other cities of the Soviet Union.

"Is it true that the atomic reactor at Stupino has blown up?"

"Have you heard that the atomic reactor at Pushchino has malfunctioned?"

"It is said that the reactor at the Moscow Physical Engineering Institute has burned out?"

The speed with which the information tinged with radiation phobia spread forced us too to pick up the telephone. We telephoned people who, in our opinion, should know everything—the press service of the USSR KGB Administration for Moscow and Moscow Oblast.

"You are our two hundredth caller today," Lieutenant Colonel Aleksandr Mikhaylov, director of the press center, answered at the other end of the line. "The inhabitants of Krasnogvardeyskiy Rayon, journalists, and representatives of the public have telephoned us on the duty desk. We were phoned by the Union of Cinematographers and informed that a plane had blown up with a 'radioactive cloud' (!!) at Sheremetyevo. Moreover we were informed that Radio Saburovo had broadcast the information that all air vents had to be closed and people were not to go outside because of enhanced radiation. The Krasnogvardeyskiy Rayon Health Department issued an instruction to prepare the evacuation of kindergartens.

On investigating the situation we came to the conclusion that the spread of the stories was occasioned by a real fact, one linked to the hospitalization of 146 staffers of two institutes—the Ministry of Atomic Power and Industry All-Union Chemical Technology Scientific Research Institute and All-Union Chemical Industry Scientific Research Institute—with a preliminary diagnosis of follicular tonsillitis. At the present time an official commission of specialists comprising doctors, toxicologists, and biochemists is working there. A number of specialists suggest that the symptoms of the illness are similar to the symptoms of poisoning by fluorine compounds. It is suggested that this could have resulted from a discharge of fluorine compounds, work with which is carried out in a number of the All-Union Chemical Technology Scientific Research Institute laboratories."

Incidentally, we personally decided to check out the rumor about the reactor at the Moscow Physical Engineering Institute and thus sent out a camera crew, which found the reactor in perfect health.

As for the reactors at Pushchino and Obninsk, they too are functioning normally. At Stupino there are no reactors at all, and that area is regarded as the most environmentally clean in the oblast.

No Official Findings Yet on Moscow Tonsillitis Outbreak

PM0506104991 Moscow IZVESTIYA in Russian 1 Jun 91 Union Edition p 3

[S. Mostovshchikov report: "Tonsillitis Originating in Defense Industry"]

[Text] A commission from 12 institutes which has been working for more than a week at the All-Union Scientific Research Institute of Chemical Technology (yesterday IZVESTIYA related the emergency which had taken place there), has up to the present been unable to officially name the reasons why 415 staffers suddenly fell ill with tonsillitis. The specialists put forward only their own versions of the matter at the commission session which took place 30 May; the investigation's actual result is for the moment unknown to a panicking Moscow.

According to Colonel Gennadiy Kirillov, acting chief of staff of Moscow's civil defense, the only achievement of the specialists' conference, which lasted one and a half hours, was that it took place in the presence of the public, the rayon's authorities, and civil defense staff. Moreover, the secret institute has, however, admitted that a "small release of some chemical substance" has occurred. However, roughly the following was said about the actual reasons for the mass illness: People have caught tonsillitis, as they have been exposed to the effect of something or other which can cause tonsillitis.

It is in general still necessary to interpret this result as an achievement of Soviet science, because they might not even have said this—the leadership of the institute, which is subordinate to the Ministry of Atomic Energy and Industry, at first kept the enormous city completely in the dark. Vitaliy Kononov, USSR minister of atomic energy and industry, considers: The delay in notifying the city's authorities was prompted by the fact that his subordinates at first wanted to get to the bottom of everything themselves. Judging by everything, the release took place not in the production facility but on the street, inasmuch as it was only those staffers who were walking from the main building to the cafeteria who suffered. At first it was thought that they had food poisoning, then some sort of virus. And while they were thinking time slipped by.

The minister says that most likely someone will have to be punished for the procrastination. They will resolve who that will be at a special collegium session. Maybe

this "someone" will also be removed from his post. However, Vadim Malyshev, chairman of the State Committee for Safety in Industry and Atomic Power Industry, is, for example, convinced that: It will not be enough to remove someone from his post here, and maintains that for things such as concealing information so serious as this, it is necessary to hold people criminally responsible. Moreover, Vadim Malyshev also expressed ideas to the effect that similar situations will await us in the future, inasmuch as practically all secret defense enterprises in our country monitor themselves, and his own department is not allowed to stick its nose into their affairs.

In answer to the question whether USSR State Committee for Safety in Industry and Atomic Power Industry staffers had the right to monitor the work of the All-Union Scientific Research Institute of Chemical Technology, the State Committee chairman replied:

"Of course not. We couldn't even get a foot in the door."

Number of Moscow Radiation Hotspots Reinterpreted

91WN0442B *Moscow VECHERNYAYA MOSKVA in Russian 18 Feb 91 p 1*

[Article by D. Gay: "Once Again on Radiophobia: Do Muscovites Have Reason To Be Frightened?"]

[Text] Just in advance of a grievous date—the fifth anniversary of the Chernobyl accident—we are thinking and speaking ever more frequently about the consequences of radioactive "emissions." As always is the case with us, there are excesses; radiophobia is becoming the lot of an immense number of people. Here is a typical example. For two years now, our newspaper has been regularly reporting to readers the radiation background in Moscow. If some rayon is not mentioned for only three or four days, alarmed telephone calls come in from there: "Has something happened in our rayon?"

But here is a far more serious fact. Recently, the newspaper RABOCHAYA TRIBUNA published an article entitled: "A Sentence Measured in Roentgens." [For a translation of this 30 January RABOCHAYA TRIBUNA article, see pages 44-46 of the JPRS REPORT: ENVIRONMENTAL ISSUES, JPRS-TEN-91-006, dated 21 March 1991.] The article was accompanied by a map of Moscow on which radioactive pollution was marked. The spots densely covered the capital's entire area. The levels of pollution are also high: Several radiation doses go as high as a million (!) microroentgens per hour. Moreover, reference is made to the specialists of Geoekotsentr.

To be honest, we have gone into a blind alley. According to the information regularly published by VECHERNYAYA MOSKVA, the associates of the Moscow Center of Goskomgidromet [State Committee for Hydrology and Meteorology], the values of the background in all rayons of the city are holding steady in the range from 8 to 15 microroentgens per hour. Where did those millions of microroentgens come from?

We turned for explanations to a commission of experts on radiation safety of the Standing Commission for the Environment of the Moscow Soviet. Its representative, L. Matveyev, deputy of the Moscow Soviet, said:

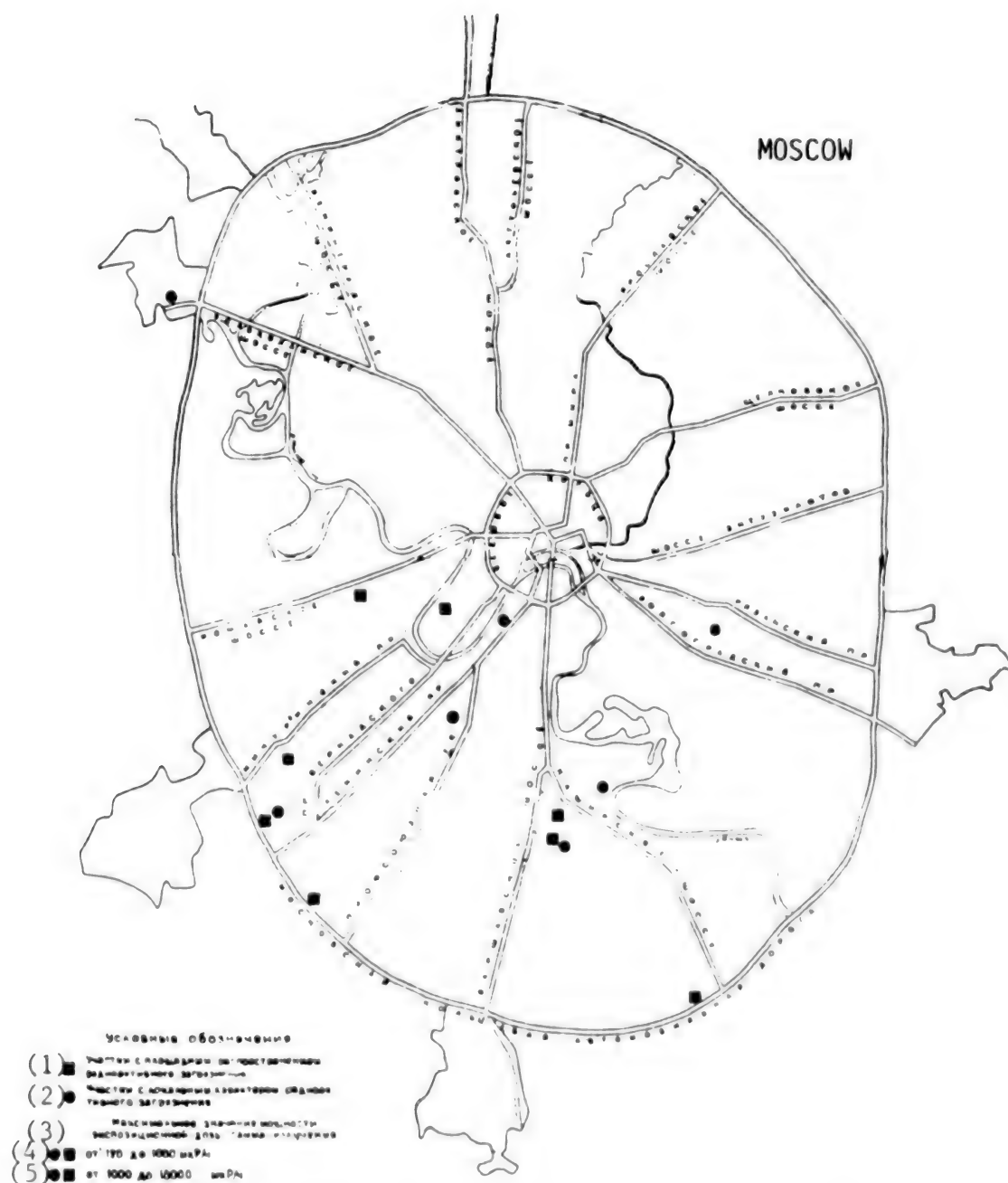
"In my opinion, both groups of specialists are right. They are merely reporting on different things. Goskomgidromet is giving averages of the gamma radiation background by rayons, and Geoekotsentr is reporting on the local contamination they have found. If that contamination is represented on a map in true scale, you would not see spots: They would be too small."

But that is not the main thing. We have to bear in mind in the detection of this contamination that it is quickly eliminated. That is why the map published in RABOCHAYA TRIBUNA by no means portrays the situation today, but rather a kind of history of the matter—where the radioactive contamination was during the last 10 years or more. There has been no trace of it for a long time, but it is noted on the map, and that has made Muscovites mortally afraid.

The radiation situation in Moscow is on the whole satisfactory at present. The content of radionuclides in the air, soil, the Moskva River is that of the ordinary background. Nevertheless, we should not be completely at ease. Because of someone's carelessness, sloppiness, some radioactive sources, which are used in many branches of industry, turn up at times in the most unexpected places. How are they to be combated? First of all, we have to tighten control over the manufacturing and use of all radioactive sources.

As for the article and the map that have been mentioned.... Unfortunately, they suffer from inaccuracies and outright errors, and they could help to intensify radiophobia among inhabitants of the city. There is one way out here—truthful and regular information about the true state of affairs.

Specialists of various departments and organizations of Moscow are represented on our commission. It naturally includes representatives of Goskomgidromet and Geoekotsentr. So, here in the name of the commission we present a map of the capital with the local contamination that exists as of this day. It differs strikingly from the one published in RABOCHAYA TRIBUNA and is the most accurate.



All areas are in the stage of deactivation, waste with a high level of radiation has been removed from them. There remains only material with a radiation level that does not constitute a danger to the population. Final deactivation will be completed in 1991.

Key:—1. Sections with aerial spread of radioactive contamination—2. Sections where the radioactive contamination is local in character—3. Maximum values of the power of the exposure dose of gamma radiation—4. From 120 to 1,000 microroentgens per hour—5. From 1,000 to 10,000 microroentgens per hour

Threat of Heavy Metal Contaminants in Moscow Water Supply Noted

21WN0441A Moscow LITERATURNAYA ROSSIYA in Russian No 6, 8 Feb 91 p 7

[Article by Vladimir Kalita: "Nineteen Tons of Cadmium for Your Table"]

[Text] A new ecological danger has reached a critical level in Moscow. The real threat of water and soil contamination by wastes from various galvanic production units using nickel, chromium, cadmium, and zinc has been added to the poor air-quality situation.

According to data from the ecological services, approximately 12 percent of the total Union production which utilizes galvanic technology is concentrated in the capital, and that is more than 900 enterprises. In a 24-hour period they discharge into the sewage system about 220,000 cubic meters of waste water and 435 cubic meters of spent solutions of acids and bases, containing about 19 tons of heavy metal ions. In the process more than half of the discharge is not subject to preliminary treatment. The overwhelming majority of treatment facilities available at these enterprises operate in the old way, that is, without putting the water back into the production cycle. In addition, these enterprises have come up against the problem of where to bury the galvanic slurry (substances containing large concentrations of heavy metals) because at the present time Moscow lacks burial sites for them. This means that enterprises are forced to remove these dangerous wastes to the dump secretly or to discharge them into the sewage system. Naturally this reduces the benefit of treatment to nil. In this way about three tons of heavy metals are discharged into the Moscow River every day, and in the aeration fields the sludge residue—the very best fertilizer—receives a daily "injection" in the form of more than 18 tons of toxic substances. The ecological damage, according to data of the Ekotekhprom Scientific Production Association, from the effect of galvanic production units around Moscow, amounts to about 70 million rubles.

According to medical research conclusions, the effect of heavy metal elements on the human body is three-fold stronger than the effect of radioactive substances. Heavy metal elements, in the concentrations which have shown up in the river, at the dumps and in the aeration fields, are contaminating the land and water; after they have moved through the well-known cycle, they end up in the tins of food products on the tables of Muscovites. And, as they say (excuse the black humor), bon appetit!

Journalists reported this as well as many other facts and aspects of the ecological situation in the country and on this planet at a press conference of the USSR Ecological Union (telephone contact in Moscow 238-34-78), an independent public organization; its main goal is to unite people's efforts to achieve the ecological safety and welfare of our country and the entire world harmony

between man and nature, a reduction in the disease rates, and an increase in the life span.

Returning to the danger of pollution in Moscow resulting from the operations of galvanic production units, it is essential to say that despite all the tragedy of the situation, there is a way out. According to S.A. Boldyryev, vice-president of the Moscow Ecological-Galvanic Association (contact telephone in Moscow 453-67-59), this organization is prepared to plan, manufacture and hand over operationally-ready treatment facilities which use a closed water cycle, and which also utilize slurry from galvanic processes. The appropriate medical organizations have come to a conclusion which confirms the effectiveness of this kind of use. Instead of toxic wastes we could obtain a decorative ceramic tile, while enterprises could significantly reduce their water intake for manufacturing needs. It is a matter of becoming aware of the danger which looms and of displaying a willingness to avoid it because the time for living according to the principle of "after us the deluge" has passed.

New Stricter RSFSR Law on Pollution, Health Norms Viewed

91WN0440B Moscow IZVESTIYA in Russian 26 Apr 91 Union Edition p 7

[Article by S. Tutorskaya: "The End of the Subservient Public-Health Inspectorate"]

[Text] The RSFSR Parliament adopted a law: "Concerning the Public-Health and Epidemiological Welfare of the Population." For the first time in the last half century public-health physicians and epidemiologists are becoming independent in their conclusions and actions. Today they do not have to submit their conclusions for approval (alas, that was the case for many years) by the local Soviet authority, including the leaders of local medicine. In fact, this means that enterprises have fewer real opportunities to "force out" compromise decisions when it comes to the demands of the public-health service.

What these compromises cost us yesterday and are costing us today is now clear to everyone. In 37 Russian cities the concentrations of harmful substances in the air are several times higher than the maximum permissible levels. In Bashkiria and in the Perm, Chelyabinsk, Sverdlovsk and other oblasts, people are living under conditions of ecological disaster.

Every year enterprises which produce and sell food products are responsible for 150-250 major outbreaks of intestinal infections! To a large degree the condition of the environment has been the "culprit" in the negative trends in the state of the Russian population's health in recent years: the birthrate has dropped significantly, the general mortality rate has increased, and the rate of decline in infant mortality rate has slowed.

And what if enterprises are guilty of environmental pollution and are, so to speak, suppliers of intestinal

diseases? Up to now they have been required to pay only miserly fines, and it was more convenient to pay them than to build expensive treatment facilities and meet public-health requirements. They may object—now, they say, they have begun to close down the ecologically harmful enterprises. But after all, it is clear that this is not a way out of the situation.

It is important to introduce public-health supervision which is genuine, and not "for the sake of reporting only" in connection with the many new enterprises which are appearing. If a serious violation of the public-health requirements has taken place, any enterprise located in Russia, regardless of what agency it comes under, now will have to pay large fines and pay compensation for material damage caused to people's health. This is being introduced for the first time. And any citizen of any state who causes damage on Russian territory bears the same kind of liability for environmental pollution. Administrative liability is stipulated, and even criminal liability in especially serious cases.

The new law was adopted by the RSFSR Supreme Soviet almost unanimously," says I. Podunova, deputy chief public-health physician of the RSFSR. "However, while it was being worked on, there were attempts to hinder us; these were made not only by various agencies but also, sad as it seems, by physicians and the leadership of the health ministries—both the Union and Russian ministries. The medical administration does not want to let "personal" public-health supervision slip out of its jurisdiction. And the fact that the departments are not reforming is understandable: they will have to make serious efforts to deal with treatment facilities and to structure their work in other ways. We have received active support from the Committee on Ecology and the Use of Natural Resources, the Committee on Legislation of the Russian Supreme Soviet, and from deputies of the Russian parliament.

And are the specialists of the public-health and epidemiology service themselves ready to work in the new way?"

We have capable young people with the will to fight. We are very much counting on them."

It would be interesting to know whether this article will recall Vladimir Ilch Len, a public-health physician from the city of Alaysk in Alaysk's Bay, several years ago. Vladimir Ilch prevented an industrial water line from being hooked up to the municipal water system, something which would have threatened the city with an epidemic. He went against the party, kolkhoz secretary, after which he ended up in the hospital with a heart attack. But he did not allow the city to be poisoned. And what about Vyacheslav Sokolov and his? They forced the city into installing public-health physician, to get acquainted with the Kirovskiy physician Valeri. Vyacheslav Sokolov went through fire and water because he turned out to be fundamentally opposed to the local

authorities and even to his own chief physician in the municipal public-health and epidemiological service.

Over a period of years all of them have been the heroes in our articles. The newspaper has defended not only them but also the sacred right of the qualified specialist to fight for the interests of the people. And during these years we received many letters from physicians who could not reconcile themselves to the submissive and dependent position of the public health service.

Today they have cause for celebration: they will be able to work normally, putting the health of the people above all considerations.

High Radiation Levels Detected in Mikun

LD0606202291 Moscow Radio Moscow World Service in English 1200 GMT 6 Jun 91

[Text] Investigations are now underway in the northern Russian city of Mikun after a powerful source of radioactive emission had been detected at a local railway depot following aerial reconnaissance and land operations.

Radiation levels caused by cesium were thousand times [as received] above normal in parts of the building.

Kola Peninsula Atmospheric Emissions, Nuclear Waste Mapped

91WN0434A Oslo AFTENPOSTEN in Norwegian 27 Apr 91 p 12

[Unattributed report: "Catastrophes Threaten Here"—first paragraph is AFTENPOSTEN introduction]

[Text] The Kola Peninsula is among the world's most polluted areas. Besides, the world's largest accumulation of nuclear arsenals is found here. In collaboration with the "Stop the Fatal Illnesses From the Soviet Union" action, AFTENPOSTEN has prepared this overview of the environmental threat on Kola. The survey is based on official figures, but it is not complete. It is difficult to get such information from the Soviet Union. The environmental threats can be divided into two groups—the polluting industry, which is an actual problem, and the nuclear sites, which represent a potential problem.

Nikel

This nickel plant emits 190,000 tonnes of sulphur dioxide annually, in addition to other harmful substances.

Zapolyarnyy

Here, 82,000 tonnes of sulphur dioxide are emitted annually.

Monchergorsk

The largest of the three nickel plants. Annual emission is 428,000 tonnes of sulphur dioxide. The three nickel

plants together emit 700,000 tonnes of sulphur dioxide, besides 300,000 tonnes of other substances, such as nickel, nitrogen oxides, and copper.

Kovdor

There is an iron works here, but emission amounts from there are not known.

Kandalaksha

Aluminum industry and some military industry, but there are no figures available concerning emission amounts.

Apatity

Large quantities of apatite are extracted here, which are shipped further in open cars. Eighty percent of the apatite disappears during production, loading, and shipment. It harms the vegetation over large areas.

Polyarniye Zori

Nuclear power plant with four reactors. The two oldest are from 1973 and 1974, the same type as those that were condemned in Greifswald in East Germany. The Norwegian Nuclear Inspectorate visited the plant last fall and concluded that there were obvious maintenance deficiencies. The power plant is emitting large quantities of heated cooling water into Lake Imandra. The temperature in the lake is eight to ten degrees higher than natural. Nuclear waste from the power plant is stored at Polyarniye Zori for up to three years before it is sent on.

Severomorsk

The main base for the Soviet Northern Fleet. It is presumed that a large part of the nuclear-powered surface vessels have their home port here. The base also has the main storage facility for the nuclear weapons that are located on Kola. Severomorsk has one of the five official storage areas for nuclear waste. The storage method and transportation procedures are unknown.

Murmansk

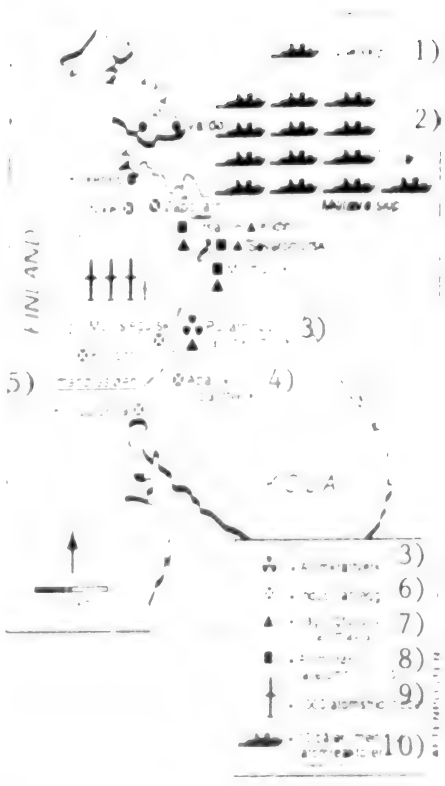
Harbor for seven civilian nuclear-powered ice breakers and a nuclear-powered container ship. Together, the ice breakers have 11 reactors; the container ship has two. Nuclear waste is also stored in the harbor at Murmansk on four other ships. The Norwegian Nuclear Inspectorate is not satisfied with the storage method.

Litsa

Submarine base, mainly for Typhoon-class submarines. Besides, a storage site for radioactive waste.

Kildir

Storage site for nuclear waste.



- Key
- 1) Civilian Ships
 - 2) Military Ships
 - 3) Nuclear power plant
 - 4) Apatite plant
 - 5) Lake Imandra
 - 6) Industrial plant
 - 7) Storage site for nuclear waste
 - 8) Nuclear reactor (all on board ships)
 - 9) 1,000 nuclear warheads
 - 10) 10 vessels (with 1-2 nuclear reactors on board)

Yablokov Links 1990 White Sea Incident With Increased Birth Abnormalities

91BN0450B Moscow KOMSOMOLSKAYA PRAVDA in Russian 25 Apr 91 p 1

[Article by A. Yablokov, deputy chairman of the USSR Supreme Soviet Committee on Ecology and corresponding member of the USSR Academy of Sciences: "KOMSOMOLSKAYA PRAVDA Begins an Investigation of the Tragedy in the White Sea"]

[Text] A year ago millions of starfish were washed ashore. The frightening details are being revealed only today, but the true cause of the catastrophe remains unknown.

An ecological catastrophe took place in the White Sea in May of last year. Millions of starfish washed ashore on the coast of Dvinskaya Bay. Several commissions

worked on the problem, including a government commission, but they did not arrive at a definite conclusion. What was the cause of the catastrophe?

There were various hypotheses: A one-time discharge of contaminants from a passing ship, an emergency release of rocket propellant, the influence of combat chemical agents submerged in the White Sea (two huge dumps of old munitions officially exist). At the request of the USSR Supreme Soviet Committee on Ecology, the country's Academy of Sciences was compelled to create a special permanently functioning commission.

And now information has appeared which has forced us to return to the May events. On 21 February the newspaper VOLNA of the Arkhangelsk Oblast Soviet of People's Deputies published an article which says that a sudden increase in abnormalities in the fetuses of expectant women was discovered at the maternity hospital imeni Samoylova (the oblast's main maternity hospital); the fetuses had been conceived exactly at the time of the ecological disaster in Dvinskaya Bay.

As V. Menshikova, head of the gynecology department reports, previously they had operated on women with a diagnosis of "abnormality of the fetus" once per year, or twice at the most. At the end of last year they did six such operations in one month.

This information seemed so frightening to me that I immediately asked the RSFSR Ministry of Health for official data. When I received the response, my alarm only increased. In 1990 the general death rate in Primorsky Rayon increased 10.4 percent compared to the previous year. That is almost three times greater than the indices for the oblast.

The number of registered malignant tumors has increased, in this case almost 10 times more than for the entire oblast. And, finally, congenital defects for the oblast, in comparison with the preceding year, increased by 24 percent (inasmuch as there is no maternity hospital, all these services are performed in Arkhangelsk, and the data for the oblast include the data for that region).

It follows from this that something extraordinary happened in Primorsky Rayon in 1990.

Looking into account the fact that our medical statistics are not very accurate and complete, I believe that the data existing at the RSFSR Ministry of Health only reflect the tip of the iceberg.

I did not write this article to frighten anyone. It is simply comparative time to understand the ecological catastrophes which man can have a direct connection with the deterioration of our health. Longevity in our country is seven to nine years less than in many developed countries. In a number of regions it is declining, and the mortality rate is rising not only in Arkhangelsk but throughout all of Russia. If we continue to ignore large

and small ecological catastrophes in our academic indifference, covering ourselves with insufficiency of data or indeterminate nature of analyses, in 20-30 years not only living nature but we ourselves may die.

Editorial note: We ask that anyone who has any information call telephone number 157-27-65. Our reporters are packing their suitcases.

Strife, Discord in Ukrainian Greens Movement Chronicled

Allegations Made

91WN04434 Kiev *RABOCHAYA GAZETA* in Russian
30 Jan 91 p. 2

[Article by V. Masarik: "Scandal in a Noble Family"]

[Text] No question about it: Of all the social movements that have sprung up recently in the republic, the environmental movement has to seem the most humane and noble in its idea. Especially since it has been joined by many people who truly support natural conservation. So why has it not become that? The recent conclusions of the auditing commission of "Zeleniy svit" [Green World], its secretariat's reaction to them, and also impressions left after the founding congress of the party of "Greens" in the Ukraine served as an occasion for reflection and analysis.

It is nearly three years now since the presidium of the Ukrainian Committee for the Defense of Peace, chaired by O. Gonchar, adopted a decision to accept into the bosom of this organization a new social movement with the most noble goals of rescuing the public from environmental disaster—the association "Zeleniy svit." Quite enough time has passed for the population of the Ukraine to feel the changes. For that matter, it has felt them directly: Several pharmaceutical enterprises have closed, as they now say, under public pressure because of certain campaigns by local organizations which were not thought through, but on the other hand were very loud and forceful. Analgin and certain other drugs disappeared as a consequence. So that now people literally have headaches because of environmental problems. "Zeleniy svit" can be given credit for taking part in several rallies mostly under yellow and blue banners, signatures following a number of declarations together with other parties and movements; in adding them, the secretariat of the association was not in the least interested whether the majority of members supported the statements made in those documents. We can also include in the assets of "Zeleniy svit" the terrorizing of the personnel of the Khmelnytsa AES [Nuclear Electric Power Station], which, alas, did not make its operation any safer. If we add to what we have said a few seminars and "round table" discussions which did not yield any appreciable result, and their obligatory orientation cannot be listed among their strong points, the pattern of activity of "Zeleniy svit" will be sufficiently complete.

Unfortunately, I cannot include among the organization's pluses two factors which the association's leadership considers highly successful. And these are the closing of the Crimean AES and the present size of the membership of "Zeleniy svit." As for the first, the closing of the plant was achieved more by the Crimean Greens themselves, and it was only later that they joined the valorous ranks of the association. As for the 500,000 members of "Zeleniy svit," we can immediately mention in passing the Ukrainian Nature Conservation Society, which up to now has numbered in the millions. And so what? To be sure, there is one other aspect in the activity of the association which for all practical purposes has had the most important role. But on that a bit later.

But now we will return to the conclusions of the auditing commission, which has studied most carefully the performance of the association and its leadership over the first half of 1990. Judging by the report submitted to "Zelena rada" [Green Council], the conclusions the commission came to are not at all comforting. In the area of finance and physical inventories above all. For instance, even one of the deputy presidents could not clearly answer the questions where, how much, and for what the considerable funds donated to the organization were spent? The same is true of numerous gifts from foreign colleagues in the green world. Up-to-date equipment, which is still exotic in our country, surprisingly crawled away without ever having been put in the records by anyone, and cash disbursements were made quite painlessly from the general fund. One only had to think up a more or less plausible proposal.

Incidentally, a complete mess is being made with the money. For instance, they ordered 1,200 pins with the "Zeleniy svit" insignia. They were sold at 2 rubles [R] apiece. But some time later, a document signed by staff members of the association was issued to the effect that the pins were distributed free. Something interesting also happened with the prizes for the sketches made of that same insignia. The prizewinners, for instance, included the wife of one of the deputy presidents, while at the same time another winner of the competition received no prize at all. The objection might be made: Since when is a wife not a person, and could she not be an artist and take part in the competition? Yes. She could be an artist and take part in the competition. But in affairs of this kind and in this kind of organization there is a need to be particularly scrupulous and, as they say, to keep one's hands clean. Otherwise, the result could be that of the "Mama-86" organization, which cropped up last summer from who knows where. On the one hand, it had a noble purpose: to bring together young mothers whose children were born since the accident at Chernobyl. Once having gotten together, they applied to various international organizations for humanitarian aid. And they actually received that aid. And they distributed it among themselves, their relatives and friends. Including the "leadership" wife mentioned above. One case of a wife could be a coincidence. Two is already symptomatic.

And so is the application abroad. Incidentally, all the members of the secretariat have already gone abroad, some once, and some even twice. Incidentally, contacts with foreign Greens is the only area of the activity of "Zeleniy svit" that has really been developed. Sometimes it even seems that the association has become a branch of "Inturist," except with a green tinge. Trips there, hosting delegations here, have swallowed up most of the association's time and money. Even if you kill me, I cannot understand what specific and constructive thing the republic can get out of it when 16 West Germans tour the Crimea, Odessa Oblast, including Lvov, and the western Ukraine. Perhaps an invitation in return, which is exactly what happened. And how is one to improve the environmental situation in the Ukraine by spending a month in the United States or Canada? But was not this passion for trips the reason why the association's first leadership was removed (after it had been in existence only three years)?

Has not "Zeleniy svit" been abusing the ill-fated party nomenklatura at every turn, unconscionably taking advantage of its official status? And at the same time developing its own (instead of four staff workers approved by the "Zeleniy svit" Congress, there are already eight, and all the salary levels were discussed by members of the secretariat, that is, an elective body), which is diligently taking care that no one from outside is able to get his nose up to this new trough. At the same time, the "Zeleniy svit" leadership is turning this truly noble movement, which is supposed to bring together people with differing political and religious views, into an extremely politicized organization. What is more, this is being done on a personalized basis, action is taken without asking or consulting the rank and file, not all of whom are far to the "left." So much for pluralism.

The secretariat's reaction to the conclusions and actions of the auditing commission might also be instructive in this context. At first, its members were told that there was nothing to check. Then, the commission was accused of being "prosecutorial." Finally, the secretariat held an emergency meeting and a decision whose assessment was that the actions of the auditing commission were aimed at splitting the Green movement in the republic. Well, that tone is familiar. To be sure, it would not be out-of-the-way to remind the secretariat that the commission was elected and approved by the congress and is accountable only to it.

As for the split of "Zeleniy svit," one needs to be completely blind (deliberately or otherwise) not to see that this occurred long ago. On the one hand, we have utterly confused primary organizations that for all practical purposes have been condemned to the whims of fate, which is passed off as "democratization" of the movement, but they are active. A bit clumsy, sometimes even harmful to the cause, but active by their own lights and according to their abilities. On the other hand, there is the newly emerged nomenklatura, which has come to believe in its own right to act in the name of all and everything. I am sure that many Greens do not agree

with me. But these are the facts, and if one is not to see them, one needs to have a very strong desire not to do so. Though I understand those who do not want to check it out: it is very bitter and painful to make another mistake. Especially now and in such a cause as this.

Everything said above, unfortunately, can also be applied to the newly created party of Ukrainian Greens. Take just the fact that three programs of the future party were immediately presented for discussion to the delegates of the founding congress: they differed not only in their language, but also in their conceptual approaches, their view of the republic's future structure and its social orientation. Democracy, one might say, is democracy. Fortunately, the delegates were nevertheless able to paste them all together into a single program, which at the same time is not without its interesting aspects.

The section of the program devoted to the future political system of the Ukraine (according to the Party of Ukrainian Greens [PZU]) deserves attention. Especially in the light of the conversation that took place in the corridors of the congress with Sergey Kurykin, one of the founders of "Zeleniy svit" and a participant in that memorable meeting of the presidium of the Ukrainian Committee for Defense of the Peace.

"Why did I not join the party of Greens? My decision was affected above all by the publication of the party's first program, which did not contain a single word about the independence of the Ukraine. Obviously, because this was a 'forbidden' topic. Now it is another matter, now one can speak about it. And then the program is calling for 'dismantling the totalitarian Soviet empire.' That is exactly what it says. The new party thereby demonstrates that it is utterly without principle, and the people who have created it have given people reason to doubt their sincerity. In other words, I do not want to be a participant in yet another deception on the basis of someone's ambition. Because the most terrible thing is that people still believe in the Greens, sometimes even as a last hope. There is one thing of which I am afraid: that the disappointment will come soon and will be bitter."

So, it is difficult not to agree with a man who knows the situation in the Green movement thoroughly from the inside. Although it would be simply dishonest to assert that there are not people in it who are honest and upright and committed to the point of self-sacrifice. There are in fact many of them. It is only a pity that their efforts are being offset by negative things, big and small, from which a general impression is formed.

Going back to the beginning of our discussion, and precisely to the conclusions of the auditing commission, it is logical to put the question: What now? "Zelena rada" has good-humoredly adopted a decision to "point out," "call attention," and "concentrate efforts." The rest is up to the congress to decide. And Yu.N. Sheherbak, USSR people's deputy, who has examined the conclusions of the auditing commission, by and large acknowledged that they were correct. And without

waiting for a congress of the "Zeleniy svit" Association, he submitted a statement that he was resigning from the post of chairman.

'Green World' Secretary Supports Claims

91W N0443B Kiev RABOCHAYA GAZETA in Russian
29 Mar 91 p 2

[Article by V. Cherenko, secretary of the "Zeleniy svit" Association and people's deputy in the Kiev City Soviet "A Short Memory Is a Poor Adviser"]

[Text] On 30 January, RABOCHAYA GAZETA published an article entitled: "Scandal in a Noble Family," which had to do with the problems of the present Green movement in the Ukraine, including the association "Zeleniy svit." It spoke in particular about the abuses committed by the new ecobureaucracy and the leadership of "Zeleniy svit," which were detected during an examination by the auditing commission.

We had every reason to expect a reaction from the leadership of the Greens. And we did not have to wait, although it proved to be rather unique. Instead of addressing RABOCHAYA GAZETA directly and confirming or refuting the facts given in the article, the leadership of "Zeleniy svit" turned for some reason to the youth newspapers. Two interviews appeared one after the other. But even in them the representative of the Greens did not convincingly refute a single fact, they preferred to switch to the author's personality, at the same time not forgetting to charge the newspaper with "an offensive against the democratic forces" and even slander, again not troubling about evidence. We should mention that the basis of the article was an altogether official document—the report of the auditing commission elected by the "Zeleniy svit" congress and accountable only to it.

And there is confirmation that everything is not really as well as it might be in "Zeleniy svit" in the letters to the editors whose authors are members of the association. They, by contrast, have written directly to RABOCHAYA GAZETA.

I can imagine what a burst of emotion many people felt reading the article in RABOCHAYA GAZETA entitled: "Scandal in a Noble Family." No wonder, this time, after all, the criticism was voiced not against the party apparatus, the KGB or mafioso departments, which at this point has been commonplace or even boring. No, this time it concerns a "sacred cow"—the democratic offspring of perestroika—the "Zeleniy svit" Association.

I confess that I myself felt bitterness when I read the article. And, as secretary of "Zeleniy svit," I must acknowledge that what it says is essentially the truth. Though not all of it, because matters are considerably worse. The whole point is that for a long time in the association, in my view, there has been no fight either for the environment or for democracy. For all practical

purposes, the administration of "Zeleniy svit" has smothered the aktiv, and has been trying to bolster its authority, which was shaken long ago, by recruiting supporters, resorting to all kinds of pledges and promises. At the same time, scattering around political declarations which at times are absurd, and consoling its inflamed vanity.

Is this not the reason why many of those who were with "Zeleniy svit" from the beginning and actually could have helped substantially in improving the republic's environmental situation, precisely through the association, have left it? V. Polishchuk, doctor of biological sciences, A. Shutko, doctor of engineering sciences, professor, and head of the Department of Industrial Ecology of the Kiev Polytechnic Institute, and many others have not made an appearance for a very long time and for all practical purposes have withdrawn from involvement. These rather substantial people have considered it an impermissible luxury for themselves to spend their time in petty intrigues over the drafting of the next proclamation which is supposed to "turn the world upside down."

In short, there has been a crisis. There is confirmation of this in the last meeting of "Zelena rada," which was held on 2 March. On that day, it was attended by only 56 of its 136 members. And what pains Yu.N. Shcherbak, who chaired the meeting, took to persuade those present to vote in favor of considering the meeting competent to make a decision. And everyone suddenly forgot that a quorum requires at least 91 present, not by any means 56. So much for the question of democracy.

And to what was that meeting devoted? They settled only one piece of business: Where to hold the "Zeleniy svit" congress, in Kiev or Ivano-Frankovsk?

It is no secret that the reason for convening an extraordinary congress was the profound crisis in the Green movement. Many people have already become a little tired of rallies and ritual incantations. And now the question inevitably arises: Where from here? Now (and indeed earlier as well), there is no real council of war that would be a generator of ideas in "Zeleniy svit." However regrettable it might be to make the observation, even Yu.N. Shcherbak, USSR people's deputy, long ago lost his influence. And there are many reasons for this. It is understandable that a member of the USSR Supreme Soviet has many concerns, his position requires his permanent presence in Moscow. For that reason, at this point he knows practically nothing or very little about the Green movement in the Ukraine, and that mostly from documents and reports. This is presumably why in the narrow circle in meetings of the secretariat one hears more and more often rather cynical remarks to the effect that "we need Shcherbak in the meantime as a banner, and still more his deputy's letterheads and signature with which people can be asked for things." Necessary in the meantime. And then? And Yuriy Nikolayevich's entire human tragedy is that he does not understand that

The second reason is Yu.N. Shcherbak's forgetfulness. Perhaps Yuriy Nikolayevich will recall that it was the Greens that first advanced his candidacy and then made him USSR deputy. And while he spent his time in the Creativity Center in Vorzel, the election campaign here was being conducted by his staff, on which I also had occasion to work. As you see, forgetfulness is a poor helper.

But let us go back to the article in RABOCHAYA GAZETA. I must acknowledge once again that everything written in it is indisputably confirmed by the results of the examination by the auditing commission. To be sure, I would not dwell on this, but would turn the material over to the KRU [Control and Auditing Administration] and to investigating authorities. How much that is interesting and surprising would be revealed to the eyes of specialists!

In this connection, I cannot but mention immediately two articles that have appeared since the one in RABOCHAYA GAZETA. The first was in MOLOD UKRAYINY, which printed an interview with S. Kurykin, who "happened" to be nearby in the bushes, and the other in KOMSOMOLSKOYE ZNAMYA, where Yu.N. Shcherbak himself spoke out. These two articles have much in common. We should say that they are addressed to a quite different readership than RABOCHAYA GAZETA, and it will be simply impossible for people to figure out who is right and who is guilty. And in fact what it is all about anyway. One other trait they have in common is that both are referring in essence to the article: "Scandal in a Noble Family" and behaved in exactly the same way: Instead of a documented refutation of the article, they switched over to the personality of its author. If RABOCHAYA GAZETA allowed an inaccuracy or committed "slander," then at least one should prove in those same pages and with the facts that what was written was untrue. That did not happen, and I specifically learned that they did not even apply to RABOCHAYA GAZETA. S. Kurykin limited himself to incantations about an "attack of the party apparatus on democracy," never forgetting at the same time to issue an appeal to everyone to join the party of Greens in spite of his own statement quoted in RABOCHAYA GAZETA to the effect that he did not want to join it because he did not trust the honesty of its leaders. So much for honesty.

Yu.N. Shcherbak, as is fitting with his rank, went further and literally stated the following in KOMSOMOLSKOYE ZNAMYA: "It is distressing that a noble movement like 'Zeleniy svit' should have its own bureaucrats, schismatics, oppositionists, and even slanderers. I am specifically referring to the article in RABOCHAYA GAZETA entitled: 'Scandal in a Noble Family' by my former assistant Vladimir Masarik, whose services I had to give up because of his hopeless laziness." But esteemed Yuriy Nikolayevich's memory is failing him once again. Was it not this same V. Masarik, along with us, who with his articles helped Shcherbak during the election campaign? And was it not he who later, when he

became assistant to the USSR people's deputy, while the latter was in Moscow or on endless foreign trips, who kept up with all his deputy's work (and this is also something I know not from hearsay, because at that time, even before election to the Kiev City Soviet, I was an assistant to V. Yavorivskiy and frequently bumped into Shcherbak's assistant in my work)? Is it becoming for a people's deputy of the USSR, a leader of the Greens, to speak so pejoratively about his former assistant? But the very fact that Yuriy Nikolayevich has already managed to discharge three or four assistants also says something. But then where is the slander, if Yuriy Nikolayevich himself acknowledges the document of the auditing commission and the fact that the organization's own bureaucrats have emerged? So much for the question of nobility and slander.

But what do I see as the whole trouble? Here it is. The vain attempts of the "Green apparatchiks" to charge the opposition with an effort of splitting or even destroying the Green movement. The only desire of the Green apparatus is to stay afloat. Our purpose is to revive and depoliticize a truly democratic movement of Greens, whose ultimate goal would be to save our native land. That is precisely the goal that they have forgotten in the present "Zeleniy svit." And a short memory is a poor adviser.

Greens' Lack of Action Claimed

91WN0443C Kiev RABOCHAYA GAZETA in Russian
29 Mar 91 p 2

[Article by L. Lysak, deputy of the Zaliznychnyy Rayon of Soviet People's Deputies and member of the Standing Commission for Ecology and the Environment, Kiev: "So Where Are the Greens?"]

[Text] I read the article: "Scandal in a Noble Family" in RABOCHAYA GAZETA with some interest. It stirred me to reflection and at the same time it clarified many things.

For example, the utter inactivity of the Greens in our rayon, although there are more than enough points where effort could be applied and there is even a "Zeleniy svit" cell headed by V.N. Timonin.

There is no need to give a great many examples. In our rayon, say, they intend to build a new four-lane highway. In itself this is a good thing, but it needs to be done intelligently. And the point is that the pollution of the air with gases here already exceeds all conceivable standards. In order to make certain of this, we even set up a kind of station, which at the same time counts the number of vehicles passing by. And in addition the road was supposed to go right past the Amasov Clinic and other medical institutions. But we deputies on the rayon soviet appealed in vain for help from our "Zeleniy svit." As we see, this kind of "trifle" does not interest it. So, we coped on our own. There is not going to be any highway

here. It is just a pity that they had already managed to cut down about 1,000 trees belonging to valuable species in Protasovyy Yar.

A second example is the construction of the housing cooperative "Aviator," where quite a few green plantings were also killed. And what did Timonin, chairman of the rayon "Zeleniy svit" do about it? He took a position "based on principle," supporting in every way Zaritskiy, deputy chairman of the rayon soviet, who was himself a member of the cooperative "Aviator," in destroying the rayon's green "lungs."

And I should mention in this connection what an uproar there was when "Zeleniy svit" was being founded. And then, during the election campaign, when the Greens were offended in rallies that their candidates were not being registered, candidates who, they said, would be very beneficial to natural conservation if they were working within the soviets. Clearly, they did not all get into the soviets. But on the other hand there are also many deputies who are not Greens and who are now seeking contacts for a joint effort and are not meeting with any response. As we see, "Zeleniy svit" is not interested in the real struggle for the health of the environment, but specifically in staying in governing bodies. But then what is the point?

I am not indifferent to the health of my native land, and that is why I have followed carefully the activity of "Zeleniy svit," and I even thought of joining it. To be sure, and then I decided against it. Why? Well, there was a lot of ballyhoo and various interviews in the newspapers and on television. But I could not name any specific and really serious deeds of the association. Perhaps because there were none. If there had been, I do not doubt that they would have trumpeted them up and down.

But there were many promises. Where, for example, is that highly advertised international center for pediatric radiology, promised a year ago by Yu. Shcherbak, leader of the Greens? It does not exist. It turns out to be easier to promise than to take an effort to its conclusion.

I know one thing, it does not take much effort to speak in rallies and give all kinds of interviews. Doing a job is a bit more complicated. Perhaps this is why people have lost faith in the Greens and have moved away from them. I know, for example, that the primary organization of our neighbors in Zhovtnevy Rayon has already ceased to exist for all practical purposes. People got tired of the twaddle. And so far no one has proposed anything to take its place.

'Excessive Politicization' of Movement Cited

91WN0443D Kiev RABOCHAYA GAZETA in Russian
29 Mar 91 p 2

[Article by M. Novitskiy, worker in the "Khimvolokno" Combine and member of "Zelena rada" in the association "Zeleniy svit": "On the Verge of a Split"]

[Text] In my view, the Green movement in the Ukraine is truly going through a bad time. Here, I fully agree with the conclusions of the author of the article entitled "Scandal in a Noble Family," published in RAB-OTCHAYA GAZETA. I see two reasons for this: excessive politicization of "Zeleniy svit" and the substitution of a superficial effect for an effective effort at natural conservation.

After all, what kind of association was conceived? It was supposed to be an organization that truly belonged to the masses—to the people, that would bring together all parties and movements that had sprung up and would spring up in the republic around the noble cause of saving the environment. But that did not happen. What is more, even those illusory hundreds of thousands of members of "Zeleniy svit" who were counted very provisionally are dwindling perceptibly. The reason lies in the extremely thoughtless actions and all kinds of declarations which have been made altogether without basis by the Green bureaucracy, which has already emerged in our organization and cares about no one's opinion. More and more of those who are still members of the association are coming to that conclusion.

For example, I would like to quote an excerpt from a letter I received from S. Shuvaynikov, chairman of the board of the Crimean "Zeleniy svit" Association. It contains the following passage: "The board has commissioned me to express the collective opinion concerning the excessive politicization in the activity of the 'Zeleniy svit' Association through the activity within its ranks of members of the PZU [Party of Ukrainian Greens] and its publication—the newspaper ZELENIY SVIT. In the opinion of the majority, a line has to be drawn between the purely political activity performed directly through the PZU and civic activity concerning the environment, without political aspects, on the basis of principles of democracy, humanism and survival—through the 'Zeleniy svit' Association. Members of the board have expressed fears that the association's activity will soon begin to be perceived as activity of the Party of Ukrainian Greens. There is a serious danger here of losing mass support from the population of the Ukraine. Failing to take note of this is to deliberately adopt destructive principles in the activity of the association and a confrontation and drawing a line of division within the association itself. What is more, this could put in place underwater reefs of a split, which is extremely undesirable at a time when we need to unify all Green forces for the constructive effort in the name and for the benefit of the Ukraine, the health of its people, and salvation of the environment."

As they say, nothing needs to be added nor taken away. But that is precisely what the present leadership of the association does not want to understand. Especially when it comes to constructive effort.

Just take the petty intrigue over where the congress is going to be held. On the one hand, it would seem, what difference does it make where it is held, just so there are

results? In my opinion (and I am not alone), it would be difficult to find a better place than Kiev. This is the easiest place to bring the delegates together, it is easier to put them up here. And as for those same considerations about public relations, here we have the radio, television, and newspapers. But no: the secretariat literally "rail-roaded" the decision to hold the congress in Ivano-Frankovsk, arguing that this would presumably "stir up" the public of the western region. It is clear to any man with common sense that even there the congress will go almost unnoticed for many people. And why specifically do we need to "raise up" the western region and not, say, the eastern region? And even then, the congress is a serious business meeting of like-minded people, not a populist show. And it seems to me that among the reasons for the choice of the place for the congress to be held we need above all to seek out the political reasons. Those are precisely the considerations which "Zeleniy svit" must get away from. And as rapidly as possible.

March Conference Summarized

91W0443E Kiev PRAVDA UKRAINY in Russian
17 Apr 91 p 4

[Article by Aleksandr Fedorov, PRAVDA UKRAINY special correspondent, Ivano-Frankovsk: "'Zeleniy svit': Where and With Whom? Notes From the Second Congress of the Environmental Association"]

[Text] At the Congress of Greens (it was held 30-31 March in Ivano-Frankovsk), I happened to meet A.I. Karabut, an active participant in the movement for environmental protection who is an associate in one of Kiev's design institutes. It turned out that we were not only born in the same year, we also took part in World War II at the same time. And now we turn out to have similar positions on environmental problems. I shared with Aleksandr Ivanovich my thoughts about my not joining the "Zeleniy svit" Association, because he is also sincerely disturbed about environmental troubles. He noted that he had read my articles in PRAVDA UKRAINY about the chemical disease in Chernovitsa and also other articles in the paper on Chernobyl, the ecology of the Crimea, the Black Sea, and the Sea of Azov, and he believes that we actually are engaged in the same effort as the Greens.

"So that your participation in the association would serve you only as a formal confirmation," the old soldier said. "But still take advantage of your presence at the congress: take a good look at the people, and only then decide. I want to warn you at once: Just as in any young movement that is gaining strength, you will now meet among us a wide variety of people—from sloggers unselfishly devoted to our idea to careerists who have attached themselves and out-and-out rogues."

And he told me a few rather unsavory stories which were later repeated in speeches from the speaker's platform by him himself and other participants in the congress. Here is one of the stories.

"Not so long ago I happened to make a trip to America with Yuriy Vasilyevich Mishchenko, a member of 'Zelena rada'. He spoke there at meetings with representatives of the Ukrainian diaspora, he portrayed our life in an extremely bad light, he blamed all the troubles on the Jews, Russians, and other non-Ukrainians, he aroused discord and malice between people. And, of course, he tried his best to arouse sympathy and empathy in his audience and a desire to help. But when that help came in the form of gifts—not to him personally, of course, but to the victims of environmental disaster in the Ukraine or simply for the association—he let no opportunity slip to make use of this. In particular, he took all the proceeds in foreign exchange from the sale of our newspaper and pins."

At that point, I expressed the assumption that such cases would be taken into account by the delegates to the congress and hereafter such people would not become part of the association's leadership.

"Unfortunately, our organization has largely taken over the forms and methods—and along with them, the shortcomings—of the command-administrative system," he objected. "There are quite a few people of that kind in Zelena rada. They know a lot about one another and support their own regardless of what it might cost. For them, this effort is a feeding trough. Such a person receives a salary of 300 rubles [R] from the association's treasury (I remind the reader that this conversation took place before the price reform—A.F.), and after all there are quite a few other occasions to live at public expense."

After such warnings, I naturally began to listen more carefully to everything that was said at the congress and to see the way in which the battle between different groups was being conducted at the congress.

The programmatic address to the congress was delivered by the chairman of the "Zeleniy svit" Association, he is Yu. Shcherbak, USSR people's deputy and the leader of the Greens party that is now being formed. As I listened carefully to this well-known man, I (and probably many others who were there in the room) wanted to hear not only an enumeration of specific environmental actions and the movement's general tasks, not only a sweeping accusation blaming "partycrats" for all the misfortunes—but also an objective and sound analysis of what was successful and what the Greens had been unable to do, where mistakes had been made, and how to avoid them in the future, whose experience should be studied and followed, what was the best way to organize the effort so that the new movement became massive, to attract into its ranks people with differing political views and positions, but with the same environmental goals.

The report of Yu. Shcherbak did not offer an answer to any of these important questions, and the delegate spoke of this with regret from the speaker's rostrum, of the congress tone speaker even referred to the leader of the association directly as a figurehead.

In my view, this is because the "Zeleniy svit" Association, conceived as an organization which was to raise a mass popular movement for a clean environment, thanks to the real and persistent efforts of its leadership, has oriented itself one-sidedly toward the platforms of Rukh and his allies. The leadership has been trying with all its strength to politicize the association, to draw its members into a political opposition within the society, into a struggle for power. And the emphasis on its main goals naturally shifts when there is this orientation in the organization's effort. When the political struggle is raised to the first rank, the basic tasks for which the association was actually founded are shoved into the background. And it is no accident at all that more than half of Yu. Shcherbak's report was devoted to exposition of the political program. He in fact declared that "Zeleniy svit" would be an organization with political features, that this organization could not stand aloof from politics, that, he said, history would not forgive it for that. He also announced that "Rukh" and the Ukrainian Republican Party are our partners" and that he was proud of close friendship with the Lithuanian "Sayudis."

It would seem (and on this the leader of the Greens himself would surely agree with me) that it would be better if everyone, independently of nationality, religion, and party affiliation, were invited under the banner of the struggle for the nationwide goals of restoring healthy environmental conditions of life, which affect absolutely everyone without exception and which are incomparably higher than narrow party ambitions. But is that really the way things are in "Zeleniy svit"?

Yu. Shcherbak declared in his speech at the congress: "We bring together representatives of different parties. Pluralism is our principle." That is what he says. But what does he do? I was told in the Ivano-Frankovsk Party Obkom that neither its representatives nor emissaries of the republic bodies of the Communist Party of the Ukraine were invited to the congress. And yet you, esteemed Yuriy Nikolayevich, cannot fail to understand that the refusal of your association, in which there are only a few thousand persons, to collaborate with such a powerful political force as the Communist Party of the Ukraine, that confrontation with an organization that numbers in the millions of inhabitants of the republic, and which in addition is open to honest cooperation in the noble cause of protecting nature—clearly does not contribute either to the greater prestige and importance of the association nor to the cause itself. That being the case, you are deliberately steering your ship onto dangerous reefs of confrontation.

For the sake of the truth, it has to be said that the leaders of the association have actually been pulling the delegates by the ears above all toward politicization of the organization as a whole and of every problem seemingly far from politics. And for them it seems to have had no significance that frequently this "dragging" was illogical and out of place. It was thus important once again to give the Communists and their party another "bold"

back for environmental disasters which we have all suffered together and with which we must also cope in that same way together.

Incidentally, rank-and-file members of the association talk more about specific deeds and the practical effort, about the need to cooperate with natural conservation committees, with the soviets, with all public organizations.

"And what do you think about all this?" I asked A. Karabut, that same delegate from the Kiev organization.

"You see, the chairman of our association is now forming a republic party of the Greens, which by all appearances he intends to orient toward the political platform of our present allies."

"And what is your attitude toward those plans?"

"I like many of my comrades in the Kiev organization, joined *Zeleny svit* in order to honestly and uncompromisingly devote all our remaining strength to solving the complicated environmental problems. And, of course, we don't like it when instead problems are thrust upon us which are sometimes purely political, sometimes separatist and sometimes concern interethnic relations."

"At this congress, one senses an opposition between the delegates of the western oblasts and the Kiev organization who has the largest in the republic."

"I think that even here the causes are the same, political. What is more, we do not like it when the association's leadership, using the money of our regional organization (incidentally, this very congress was paid for with R10,000 taken from our account), together with the organizations of the western oblasts gets rid of our people from *Zelena rada*."

This scandal at which A. Karabut hinted and about which many delegates were talking excitedly in the corridors, spilled over into the auditorium when A. Izotenko, chairman of the control and auditing commission, went to the speaker's platform.

He reported to the congress on the intolerably "tree" attitude of many responsible persons toward expenditure of money from the organization's treasury. He raised the issue on the basis on which such valuable "gifts" from foreign benefactors as computers, fax machines, video equipment, and copying machines worth hundreds of thousands of rubles and belonging to the association are being used personally in their apartments by members of the leadership: A. Panas, S. Demidenko, Yu. Mishchenko, A. Gerasimov, and others. If all that equipment is not in use in the headquarters of "*Zeleny svit*," A. Izotenko said, then it ought to be turned over to the regional organizations, and not used in the interests of individuals. And no one was surprised that the chairman of the auditing commission should propose that the performance of the association's secretariat over the reporting period be pronounced unsatisfactory.

The congress lasted two days, and almost that entire time was spent on the struggle for power within "*Zelena rada*," for the high-paid staff positions. The previous leadership, in spite of the documented criticism and incidents that clearly compromised certain candidates, made enviable efforts to preserve everything as it had been. Every time it was felt that someone would lose a vote under pressure of irrefutable charges, Yu. Shcherbak would take the floor and, as they say, assert his authority. But some of the workers promoted to the main headquarters of the association withdrew their nominations demonstratively as a sign of protest against the undemocratic nature of such elections.

This distribution of staff positions, of course, caused dissatisfaction among the delegates, who called upon the presidium to find the time to discuss the report, exchange of know-how, to discuss the problems of regional organizations. But it was felt that the "new" leadership which was made up of the same people as before was not very worried about all that. The effort managed to carve out only a few hours for debating the essence of environmental problems.

And there were interesting speeches.

For instance, G. Goncharenko of Kiev criticized the report of Yu. Shcherbak, the association's chairman, for the absence of a serious analysis of its activity. The speaker emphasized that the doors of the association must always be open to all, especially participants in the environmental movement. "But we members of the Kiev organization," he said, "at one point wanted to take part in a meeting of '*Zelena rada*,' and they simply did not let us in. So much for glasnost, for tact, and for ethics."

Ye. Korbetskiy of the organization "*Vryatuvaniye*" [Salvation], created by the collective of the Nuclear Research Institute of the UkSSR Academy of Sciences, spoke about the interesting experience gained by that organization in creating independent voluntary stations for dosimetric monitoring in rayons of Kiev and Zhitomir Oblasts contaminated with radionuclides.

Yu. Vysochin of Cherkassy spoke about cases of pollution of the water of the Dnieper, about the need to call the attention of the general public to these cases and to force the authorities and enterprise collectives to take urgent measures to save the great river.

Along with the specific businesslike speeches, there were also speeches whose main purpose, in the absence of constructive ideas and proposals, was to heat up political passions. But what have the appeals of the writer S. Plachinda, who furiously tried to persuade the delegates that the Ukraine absolutely and as soon as possible needs its own Ministry of Defense and its own Army, have in common with anxiety about the environment?

And still, in spite of those costs, activists of the Green movement can do a great deal and quite often do a great deal in their regions to draw people's attention to acute

environmental problems. For which we all should say a sincere thanks to the true devotees of this noble movement.

As I was saying farewell to my new good friend A.I. Karabut, he asked me: "Well, and what happened about your joining the association?"

I replied that I support the Greens with all my heart in their selfless activity. But today I, like many others, am held back from joining the "Zeleny svit" Association by the unjustifiably high politicization of its program, which is causing a dangerous confrontation in society, and by the outright extremism that is hindering important specific efforts. And this, in my opinion, is the most harmful poison for our environment. And how can I fail to mention here that the main idea of the entire Green movement in the world is to bring everyone together in the name of humanity's survival?

Ukrainian Greens Given Official Status

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[Text] The Green Party of the Ukraine has been given an official status. Its leader, Yuriy Shcherbak, a USSR people's deputy, was presented with a certificate of registration of the party's statute in the republic Ministry of Justice. There are nearly 6,000 members of the Green Party now. In addition, the party has quite a few supporters. Thanks to them the Greens carry out their policy to protect the environment and control zones polluted as a result of the Chernobyl catastrophe.

Ukrainian Green Party Congress Ends

LD0306034191 Moscow TASS International Service
in Russian 1715 GMT 2 Jun 91

[By TASS correspondent Miron Pavlyust]

[Text] Ternopol (Western Ukraine), 2 Jun (TASS)—Ways to implement the principle of a nuclear-free republic, and the protection of the individual from social oppression—these issues were the focus of attention of those attending the second congress of the Ukrainian Green Party, which ended here today. Also taking part were "Greens" from the Russian Federation, Poland and Czechoslovakia.

In spite of the fact that the Ukrainian Green Party numbers only 3,500 people, it enjoys authority in the republic and its popularity is constantly growing. This is promoted to a large extent by events held by the "Greens." Thus, with their assistance more than 200 children from the zone afflicted by the Chernobyl accident travelled to Yugoslavia for rest and treatment. The Ukrainian Green Party's international links are gaining in breadth and strength, with like-minded people in Germany, Spain, Poland, Czechoslovakia, and Yugoslavia.

Efforts To Reduce Kiev Water Supply Contamination Examined

91WN0441B Kiev KOMSOMOLSKOYE ZNAMYA
in Russian 5 Apr 91 p 4

[Article by Valentin Smaga, leader of the Green World Club, telephone number 441-86-51: "Only the Free Will Survive"]

[Text] Clean water will appear in Kiev only when the beer plant begins to bottle artesian water for retail sale.

I read this shocking piece of news in the decisions of a scientific and practical conference on the water-supply problems of the Ukrainian capital. One of its organizers, the chairman of the gorispolkom's ecological commission, Nikolay Shchepets, emphasized in a personal conversation that this forum was also held in order to give a worthy rebuttal to "irresponsible coverage in the press." An article entitled "Dioxins in Kiev?", which was published in KOMSOMOLSKOYE ZNAMYA on 5 March, headed the list.

All this is strange. The newspaper published a report by the director of the country's leading institute on water research, Vladimir Goncharuk, to the effect that a very dangerous toxin had been discovered in the Kiev water system. No one refuted him. So what is the problem? Previously such questions were resolved in a simple manner: they stamped FOU—for official use—on papers like the one about dioxins, and all the news writers simultaneously acquired the necessary degree of "responsibility." Now, however, you do not conceal shocking information on the state of our water resources. For example, the deputy chairman of the Bryansk Environmental Protection Committee, Valeriy Solovyev, appeared at the conference. He reported a surprising fact. The city's treatment facilities were designed to handle 160,000 cubic meters of effluent, but by some miracle they are handling 170,000 now.

A problem has developed: all the trash which accumulates in Bryansk arrives at Kiev's water intake a week later.

The guest from Bryansk made an urgent plea for help to renovate his city's treatment facilities. This was expressed in quite proper form. But it is, in essence, nothing other than ecological blackmail. Kiev, could take this kind of approach to the problem and "shift its rights," to Dnepropetrovsk, for example, while sending in that direction something other than a little spring water. And for those people who live on the banks of the Dnepr below Energodar it is simply unbearable: every year the Zaporozhye Power Plant carries out the so-called drainage of its coolant pond, discharging 550 million cubic meters into the river; this is a very gross violation of Article 19 of the USSR Water Code.

However, it is clear to everyone that the old laws on environmental protection do not work. Every day the Dnepr receives one billion cubic meters of toxic effluent.

This hellish cocktail contains 1,300 chemical elements and compounds. Moreover, the maximum permissible concentrations for organic materials, salts of heavy metals and ammonium are exceeded several times over, and bacterial contamination has increased 10-fold. In essence, we are drinking water from a half-dead river in which normal biological life is already impossible.

Thus the problem of fresh water has become a matter of survival for the people who inhabit the banks of the great river. For this reason I asked Vladimir Shchepets about his attitude toward the draft law "Concerning the Protection of the Environment." As it turned out, the UkSSR Supreme Soviet has taken into account all the proposals of the city soviet executive committee. Prior to this an economic mechanism for the payment of environmental damage claims was established in Kiev on an experimental basis. The results of the experiment provided the foundation for the corresponding articles of the draft law. For this reason the state of affairs in Kiev can be the basis on which we may judge with a sufficient degree of accuracy what will happen if the draft of the republic's main environmental protection law becomes a reality.

Rejoice, O Kievans! By the end of the year the city's coffers should receive—for the first time—R20.3 million from those who daily poison the water and air and who destroy our health. This sum most likely will not even suffice to pay for the sick leave and compensate for the lost output of those who have become ill from the charms of capital life.

Do you feel the progress? According to the old legislation we received nothing from those who are poisoning us, and according to the new, we will receive pathetic crumbs—20 million and a whole administration of new officials in order to dispose of the money.

The main characteristic of a bureaucracy, which is its tendency to reproduce asexually, was noted a long time ago by the English satirist in his famous "Parkinson's Laws." According to the existing rules officials are given 10 days to prepare a report for one letter. But the the commission of the UkSSR Supreme Soviet has set aside a total of five days for the entire community of the Ukraine to discuss the draft of the main environmental protection law for the republic. What is the great hurry?

Moreover, respected readers, the commission of Nikolay Zaludyak (in my opinion the biochemical plant built in Kremenchug while he was secretary of the party gorkom there demonstrates well the level of his ecological knowledge) wants very much to bring the draft to the Ukrainian parliament for a vote as soon as possible. The parliament has a majority, which is—with reason—called overwhelming, and which willingly approves all documents which are convenient for the powers that be.

It is not surprising that the commission now has to collect—instead of calm proposals for the draft—anxious protests by various public organizations. The Green World (Zeleny Svit) Ecological Association and a

large group of activists from the Ukrainian Society for the Protection of Nature have decisively opposed the game of perestroika being played in the nature-management system.

In all civilized countries the state environmental protection services come directly under the legislature and function on the basis of strict laws and clear economic mechanisms. The U.S. Environmental Protection Agency, for example, would long ago have completely closed down the Kiev Bolshevik Plant for contaminating the Lybed River. Even under the new legislation the polluters will escape with only a warning. Why? Because the State Ecology Commission remains subordinate to the UkSSR Council of Ministers, that is, to a council of economic ministers.

Why do we need an imitation of change? Let us heed another well-known scholar, Vladimir Maksimchuk, candidate of technical sciences. He has the following comments on the Bryansk request:

"Once Russia, Belorussia and the Ukraine have declared their sovereignty, then it is completely natural to conclude an agreement on inter-republic water exchange, stipulating in it the volumes and quality of water, and of course, compensation for damage due to pollution. Agreements of this kind have been concluded between the USSR, on the one hand, and Romania, Poland, Hungary, and Czechoslovakia, on the other. Until official documents of this kind are signed, good water management on the Dnepr is almost impossible."

Those are the weak points in the draft law, which have been found by extremely responsible specialists, and not by irresponsible journalists, as was claimed at the conference.

The revival of the Thames and the Rhine provides a convincing example of what a modern mechanism for environmental management must look like. If we do not revive the Dnepr in exactly the same way, we will simply perish due to the polluted water. For this reason we do not have a great deal of choice, either we meekly stand in line to buy pure water in bottles or we work to achieve life in a truly sovereign Ukraine with a healthy economy and effective legislation.

The hard truth is that only a few people will survive in the land which experienced the disaster of Chernobyl.

Ukraine Appeal to Defense Minister on Pollution

[D0606194193 K... K... International Service on Ukraine] 06/19/91 15:46:31

[Text] The Ukrainian State Environmental Protection Committee has appealed to Marshal Yazov to take urgent measures to stop polluting subsoil waters in the town of Dubno, Rovno Oblast, with oil products from military ammunition dumps. All our previous appeals were unanswered.

Funding Sought To Publish Ukrainian Medical-Ecological Atlas

by Vladimir Komsomolskiy ZNAMYA
in the journal "What Do We Live?"

[Article by V. S. "What Do We Live?"]

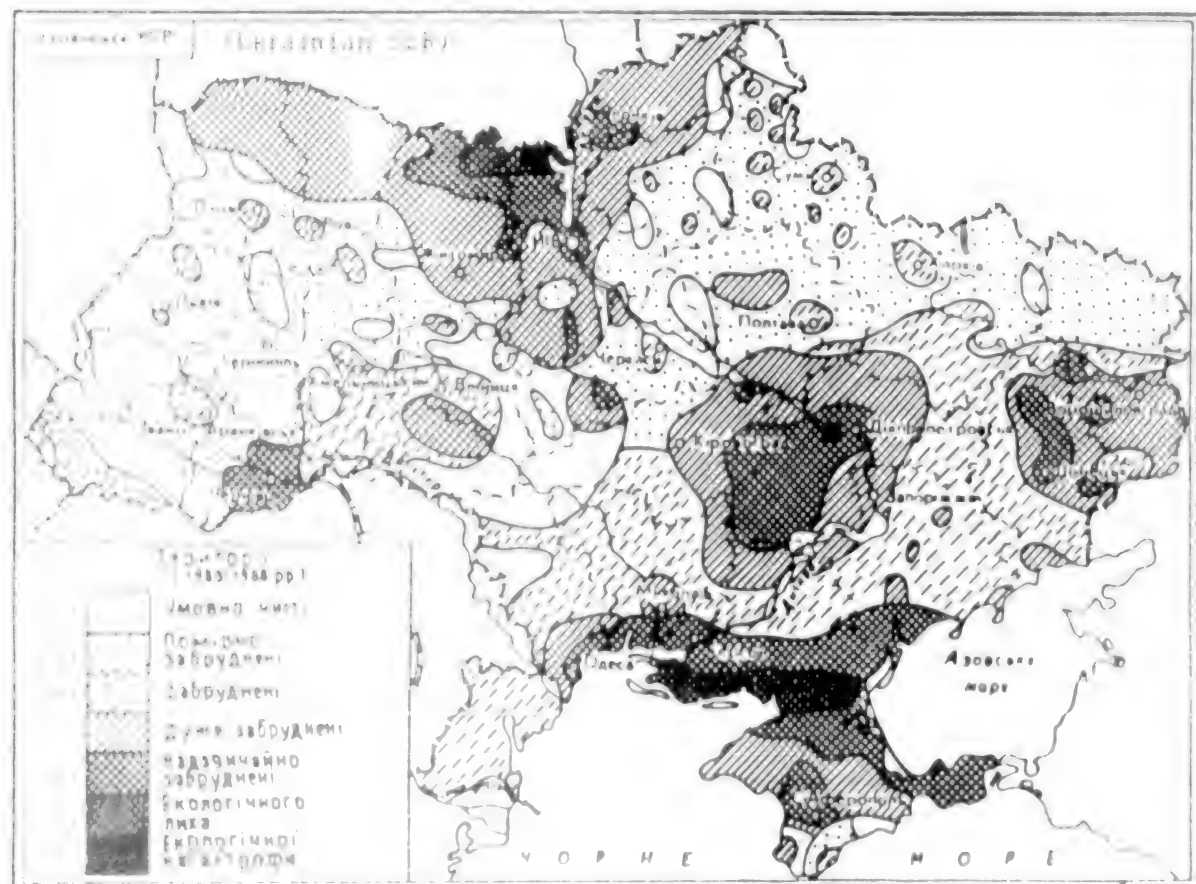
[1991] Vladimir Baranovskiy, candidate of geographical sciences, has completed work on a special edition of a medical-ecological atlas of the Ukraine.

The central place in the atlas is occupied by a map of the ecological and geographical situation in the Ukraine. KOMSOMOLSKOYE ZNAMYA presents the reader with the latest version of this effort, which is significantly more precise and thus is to be distinguished from those published in other publications. The manuscript of the atlas is on deposit with the Ukrainian Scientific Research Institute of Technical

Information as of 2 April 1991 under the number 443-UK-91. All who wish may familiarize themselves with it at in the library of the institute.

This work of Vladimir Baranovskiy will probably interest more people than just scholars. During the summer vacation season this map, without exaggeration, will be sought out by hundreds of thousands of people. The dissemination of graphic and precise information on the ecological situation in the Ukraine is of great social significance. About 13,000 rubles are needed in order to publish a color version of the atlas. As a result, the scholar is searching for sponsors among state and public environmental organizations, cooperatives, and regular business people.

It is not easy to bring people the truth about the state of the land on which we live. KOMSOMOLSKOYE ZNAMYA is prepared to help all who are willing to undertake the financing and publication of the atlas to establish business contacts with Vladimir Baranovskiy.



The Ecological Geographical Situation in the Ukraine; Scale 1:7,000,000

Novorossiysk Plan To Accept Austrian Garbage Criticized*91WN0450A Moscow PRAVDA in Russian 11 Apr 91
Second Edition p 6*

[Article by PRAVDA correspondent K. Aksenov: "Are We Out of Our Minds?: Well, Well!"]

[Text] Krasnodar Kray—A truly sensational report appeared recently in local newspapers, to the effect that all of Vienna's garbage would be "moving" to Novorossiysk. Some people took this as a belated April fool's joke. But as it turned out, the legitimacy of the well-known expression was again affirmed: Where there is smoke, there is fire.

What is at the bottom of the story? V. Durov, general director of the Soyuzstroyekologiya [Union Construction Ecology] Scientific Production Association took a voyage to Vienna one day. Meeting the head of the Glasispeks [as transliterated] Company there, he came to an agreement with him on an unusual contract. The Austrian party promised to construct a waste-processing factory in Novorossiysk and pay the city \$1 million per year over an extended period of time. By way of gratitude for this aid, the city by the sea would have to accept Viennese garbage for storage. And this waste is estimated at millions of tons.

A number of regions of old Vienna are supposed to be reconstructed in the near future. But the local authorities have run into a problem. Where would they put the broken bricks and pieces of asphalt, concrete, and construction metal? No such burial ground exists on Austrian territory. So they asked the Soviet side to take the garbage. And thus began an admittedly strange transaction.

Interestingly, Comrade Durov is rightfully considered the father of the contract of the century in Novorossiysk. He is zealously testifying that a dozen or so million tons of waste from the ancient European city will not be in the way on the banks of the Black Sea. They have already examined a place where it would be possible to dump the rubbish for permanent storage: An isolated area on the road to the resort town of Gelendzhik along the right bank of the famous Tsemesskaya Bay, along with other small corners of the unique natural setting of the Black Sea region. And now "specialists" are trying to prove that such a "trash bomb," as the local wits have accurately christened the aforementioned contract, is even profitable for the city!

It is worth noting that Novorossiysk is a unique port city on the Black Sea which has been suffering from ecological shocks for decades. Several large cement factories are situated within its boundaries. Much money has already gone toward trying to smooth over in some fashion the effects of the caustic dust inflicted by the enterprises on the city's neighborhoods. However, even today whitish clouds of cement constantly hang over the sea and the bay and over the homes of the residents of

Novorossiysk. Environmental activists have long been sounding the alarm to reduce emissions, but the problem remains uncommonly severe. The people understand that the factories give the country the "bread of construction" that it needs. And so they put up with it. But should Viennese waste be added to it?

No amount of the most alluring "foreign currency" can pay for the ecological as well as moral damage from the aforementioned transaction. As a result there is disquiet in Novorossiysk today. The residents reject the very idea of the construction of a "burial ground" for garbage from another country on the bank of the sea.

At the same time a purely ecological question also arises. At present the Novorossiysk port is involved with unloading grain and many other cargoes that the country needs. And suddenly ships with another "product" will be coming to its docks. How are they to unload another million tons and transport all that to the dumping and storage area? How much transportation, fuel, and labor will be needed? There are many questions. And who is going to pay for all of this?

Azerbaijani Environmental Head Previews June Caspian Conference*91WN0442A Baku BAKINSKIY RABOCHIIY
in Russian 20 Apr 91 p 2*

[Interview with Arif Enverovich Mansurov, chairman of the AzSSR State Committee for Environmental Protection, by Kh. Imanov, Azerinform correspondent; place and date not given: "How To Save and Preserve the Caspian"]

[Text] Our environment, put simply—the nature of our native region, requires immediate protection. Having entrusted to us all its wealth, it deserves attention and concern in return. Problem Number One in the republic is the task of preserving the unique ecological system of the Caspian Sea. This task goes far beyond the purely regional limits. And it is no accident that the first conference on the problems of the Caspian Sea, which is being held this June in Baku, is international in nature. A correspondent of Azerinform interviewed A.E. Mansurov, chairman of the State Committee for Environmental Protection.

[Imanov] Arif Enverovich, how was the idea born of holding the First International Conference on Problems of the Caspian Sea?

[Mansurov] It must be noted that the initiative came from the republic's president. And our committee, jointly with the Academy of Sciences, readily responded to it. The state of the Caspian requires major and decisive measures today, and in backing up the idea of this conference, we are pursuing specific goals: First—to attract the attention of the Soviet and world community to the ecological problems of the Caspian Sea, and second—to solve specific problems related to consolidation of the scientific-technical potential of the countries

in the region around the Caspian. And finally, to unify the activity of state and scientific research institutions involved with the protection and study of the natural environment into a single comprehensive program for saving the ecosystem of the Caspian Sea. In addition, we suppose that the conference will help to broaden mutually beneficial intergovernmental scientific and social ties of the Azerbaijan Republic with foreign countries.

[Imanov] It follows, then, that the range of participants in the conference will be rather broad?

[Mansurov] Invitations to the conference have gone out to the heads of state committees for environmental protection of the USSR and the republics in the Caspian region, to heads of departments concerned with the protection of nature of the Islamic Republic of Iran and the Turkish Republic. With the active participation of the republic's Ecological Union and the movement of Greens, invitations went to representatives of scientific and public organizations in the United States, Canada, England, Scandinavia, and other countries of West Europe, and also to other leading scientists and representatives of the country's specialized scientific institutions concerned with the environmental problems of the Caspian Sea. It goes without saying that the republic's best scientific personnel will also be taking part in the conference.

[Imanov] Arif Enverovich, for a long time we did not have truthful information about the state of the Caspian Sea. Now much of the previously secret data has been published. But along with glasnost, its inevitable satellites have also emerged—rumors and exaggerations. What in fact is the situation?

[Mansurov] I will say frankly that the situation is so serious that when the exaggerations are checked out, they may prove not to have been so at all. Within the limits of a newspaper interview, it is difficult to describe the situation even approximately. I will say only that the anthropogenic load on the natural ecosystem of the Caspian Sea has already come close to the critical level after which the process of self-purification may cease, and the stage of extinction sets in....

[Imanov] ...as happened to the Aral Sea?

[Mansurov] I do not want to even think about it. The tragedy of the Aral must not occur again. But that means taking the most decisive steps and unifying the efforts of all the peoples of the Caspian region. The alarm should have been rung long ago. But, fortunately, it is still not too late even now. It is still possible by concerted effort, bringing together all the available potential, to save the Caspian. We must be aware that for us the Caspian is not only petroleum and gas, not only fish and golden sandy beaches. After all, this is also our history.

...Information about the Caspian Sea can be found in Homer, in the writings of the geographers of the ancient world—Hecataeus of Miletus, Herodotus, Aristotle, Petrocles [Petrarch (?)], Strabo, and Pliny wrote about the

Caspian. The Caspian Sea has about 70 names. Its present-day name "Caspian" came from the name of ancient tribes—the Caspians (who raised horses) and inhabited the right bank of the river Kura in the first century BC. But the Arabs, for example, called it the Girkan, Abeskun, Dzurdzhan, Daylem, and Hazara Sea—from the name of the Hazaras, a people inhabiting the northeast coast of the Caspian. The Chinese called it Xi-hai, the Turks Kuchuk-deniz, the Tatars Ag-deniz, and the Russians the Khvalin Sea....

[Imanov] In short, the Caspian has general human value?

[Mansurov] Unquestionably. And not only because it has a rich history, because this is the largest lake in the world, because it is located 27 meters below sea level. All of these distinctive features we know from school geography. But few people know, for example, that the Caspian Sea is extremely valuable because of its climate-shaping importance. It equalizes the amplitudes of air temperature fluctuations of the entire Caspian region, so that it makes the climate appreciably milder. The Caspian supplies moisture to many regions of Europe and Asia, delivering an immense amount of water vapor into the atmosphere. It is a natural barrier to the spread of Central Asian deserts, limiting them from the west. And finally, it is the only ecosystem of its kind.

[Imanov] You have already said that it is not yet late to save the Caspian, but time is passing. Is this the reason why a short period of time was given for preparation of the conference?

[Mansurov] Well, that is not quite the case. It is unfortunately impossible to make up for lost time by shortening the time of preparation. But, of course, we cannot delay. And we did undertake to hold the conference under time pressure. Today, literally every day is precious.

[Imanov] Will this not affect the quality of its preparation and the way it is conducted?

[Mansurov] I am convinced that it should not. Immediately after the decree of the Cabinet of Ministers on holding the conference, an organizing committee headed by A.T. Rasi-Zade, first deputy chairman of the AzSSR Council of Ministers, and a working group that deals with the whole range of current organizational questions, were formed this February. And I will say without exaggeration that as of today progress is on schedule. But the principal effort still lies ahead. After all, we set ourselves the goal of holding a conference at the highest international level and, I would add, the highest level of quality.

[Imanov] So, we would like to wish the organizing committee and the working group, the State Committee for Environmental Protection, which you head, and the AzSSR Academy of Sciences, as the sponsors of the First International Conference on the Problems of the Caspian Sea, success in conducting it. It would seem that every inhabitant of our republic has an interest in this.

[Mansurov] Thank you for your good wishes. I would like to take this opportunity, without waiting for the results of the conference and the instructions and decrees, penalties and fines, to once again turn the attention of everyone who can in any way influence the process of restoring the Caspian to health to the disasters of a dying sea. I am referring above all to enterprises dumping industrial effluents and waste into it. It is time to stop! Saving and preserving the Caspian Sea both for the present generation and also for future generations—that is the duty of every honest man!

Officials View Armenian Power Generation, Ecological Requirements

91WN0466B Yerevan GOLOS ARMENII in Russian
10 Apr 91 pp 1-2

[Article by G. Santuryan, director of the Razdan State Regional Electric Power Plant, distinguished engineer of Armenia, honored power engineering specialist of the USSR, and P. Kyalan, chief of the Scientific Research Department of Power Engineering of the Yerevan Polytechnical Institute, candidate of technical sciences: "All About Ecology: Continuation of the Discussion"]

[Text] To demonstrate the necessity of a continuous increase in the production of electric power in the republic does not fall within our task. We will simply recall that in Armenia, a republic with developed industry, per capita production of electric power is greatly inferior to that of many countries in the world. To talk seriously about the fact that someone is obligated to produce something at home and turn it over to us is a subject for the average person. As well as about the replacement of the large power industry through nontraditional sources of electric power in the foreseeable future. Along with this, the worshippers of pure power engineering intentionally or out of ignorance do not talk about the possible and necessary capacities, the ecological sins, and the high unit cost of the proposed installations. But, you know, the time has come to learn to count not only the money in one's own pocket. Reality consists of the fact that one can survive, if everyone, following the example of the developed countries, having rolled up one's sleeves, will begin to put things in order at home, in spite of the barriers and overcoming the enormous difficulties that arise in any undertaking.

The thermal electric power station with a capacity of 800 megawatts, located in the center of Berlin, may serve as an example for imitation. The station uses city waste and coal as fuel. Along with electric power, heat is produced for heating, as well as cement, gypsum, and scrap metal. And it would not occur to any of the Berliners to calculate the quantity of the burnt oxygen since the station, in supplying the needs of industry and the population, observes within permissibly reasonable limits the demands of ecological cleanness. And there are many such examples.

Thermal electric power stations (TES) are the basic source of electric power at the present time in all countries of the world. Armenia is no exception. The largest TES in the republic is the Razdan TES with an installed capacity of 1,110 megawatts. Proceeding from the obsolescence and wear of the equipment being used, as well as the increase in the reliability of the power supply to the republic's consumers, an expansion of the station is being carried out through the installation of four modern power-generating units with a capacity of 300 megawatts each, having a greater efficiency factor and a low unit fuel expenditure—330 grams per kilowatt hour instead of the 360 grams per kilowatt hour that are being burned at the present time in the power-generating units being used at the station. Unfortunately, the first power-generating unit already now cannot be put into operation before 1992. The fourth—according to the most optimistic prognoses—in 1995. Although it is well known that any state flourishes economically and the reliability of electric power supply increases sharply when the growth of electric power station capacities outpaces the growth of the used capacities of industry.

Fuel and water are the basic raw material for the production of electric power in a TES. The reduction of the unit expenditure of their consumption is an important task of the power engineers, which is also aimed at the decrease of the ecological harm inflicted on the environment. Natural gas—the cleanest in ecological respects—is envisaged as the basic type of fuel (90 percent) utilized at the Razdan State Regional Electric Power Station. As a reserve, during a pipeline accident—mazut (10 percent). The justification of the necessity of using natural gas as the basic type of fuel in the TES of the republic is an important ecological achievement of the power engineers of Armenia. Low-calory types of fuel are generally accepted throughout the world for burning in TES: Brown coal, shale, peat, and even city garbage, which, along with harmful emissions into the atmosphere, produce a large quantity of ash and other waste materials.

To raise the reliability of the output of electric power, and to reduce the dependence on the whims of the "neighbors", networks of above-ground and underground capacities for the storage of fuel have been installed in the TES of Armenia and are being continuously expanded. They exist in all stations of the world and are highly necessary to Armenia, which in terms of its geographic location is especially subject to apolitically-motivated blockade. Fuel can be accumulated and used during difficult moments, which is for the time being impossible with electric energy.

The second type of raw material—water—is also in extremely short supply for our republic. For the Razdan State Regional Electric Power Station, everything necessary is being done to reduce the expenditure of water through the use of closed cycles. Thus, for the cooling of the steam wasted in the turbine, Geller's ecologically clean "dry" water cooling towers have been introduced at the station and are being used for the first time in the country. For comparison, it may be noted that "wet"

water cooling towers, set up in analogous power-generating units of the Armenian Nuclear Power Station with a capacity of 200 megawatts, "evaporated" about 40 tons of water an hour, which required continuous replenishment, and the clouds of steam over the water cooling towers were visible from afar. Geller's water cooling towers are envisaged also for the 300-megawatt capacity power-generating units that are being newly installed and are at the present time being assembled in cooperation with Hungarian specialists.

One of the basic indicators that also characterize the ecological cleanness of thermal power stations is the magnitude of the unit expenditure of electric power for their own needs. The reduction of this indicator leads to the decrease in the unit expenditure of fuel during the output of electric power and, in the final analysis, to the reduction of the quantity of emissions of flue gases into the atmosphere. The Razdan State Regional Electric Power Station has attained appreciable successes in this direction and occupies one of the first places in the USSR Ministry of Power and Electrification.

During a 24-hour period, the quantity of electric power needed by consumers changes. In the 24-hour load schedule of the electric power system, "peaks" and "off-peaks" develop. Usually, in order to cover the irregularities of the 24-hour load schedule, hydroelectric stations with a daily run-off pond are involved. This is the optimal variant. The Armenian energy system is deprived of this possibility. The hydroelectric power stations that exist in the republic, unique in the engineering they embody, operate in the routine of only optimal use of water flow for irrigation needs, which in the course of following to its place of destination, produces incidentally also electric power. The Yerevan and Kirovakan Heat and Electric Power Stations are the basic sources of heat and operate in the mode of producing steam that is being used by industry.

Nuclear power stations do not allow changes in the output of electric power and in all energy systems operate with an unchanged load in the base of the 24-hour schedule.

Thus, the Razdan State Regional Electric Power Station is the only possible regulation station of the 24-hour load schedule of the Armenian energy system. For the TES equipment, this is an unhealthy and, in technical-economic respect, inexpedient routine. A change in the load of a power-generating unit requires changes in the productivity of powerful mechanisms for its own needs—the feed pumps which feed water into the boiler, blow fans which supply the furnace with the necessary amount of air, and smoke exhausters which remove the combustion products. The regular means being utilized now, which have good characteristics in the case of small changes of expenditures, become extremely uneconomical with the increase of the depth of regulation. The search for means directed toward raising the efficiency of regulation is an urgent task confronting the power engineers in all countries of the world. Research along this

line is being conducted at the Razdan State Regional Electric Power Station jointly with the Yerevan Polytechnical Institute. Positive results have been achieved, which make it possible to increase the efficiency of the mechanisms through a change in the speed of rotation. The results of the scientific research work have been brought to the stage of industrial introduction. The station has already received the ordered electrical equipment. By order of the USSR Ministry of Power and Electrification, the Razdan State Regional Electric Power Station has been designated as the main organization for the development of the powerful alternating current controlled-velocity electric drives. According to the data of the technical-economic calculations carried out by the Rostov branch of the Atomteplotroyekt Institute, the introduction of controlled-velocity electric drives of the type ETVA-5000/6 on the feeding pump and PChD2-500-500-12.5 on the blow fan and the smoke exhauster of one power-generating unit with a capacity of 200 megawatts will make it possible, during a year of operation, to achieve an economy in electric power on the order of 10.7 million kilowatt hours. At a unit expenditure of 360 grams per kilowatt hour for its production, 3,850 tons of equivalent fuel are necessary. For the sake of clarity—this is 77 railway cars of 50 tons each. On the economized fuel, a power-generating unit with a nominal load of 200 megawatts can operate for 53.5 hours. The profit in a year comes to R208,700, not taking into account improvements in ecology from the reduction of emissions and pollution of the environment. During the summer period, they were forced to reduce the load of the power-generating unit to the technical minimum possible—120 megawatts, which is attended by great losses for its own needs. It becomes necessary to shut down the power-generating unit. However, this leads to the additional expenditure of fuel for the heating of the power-generating unit during the start, as well as to the acceleration of the aging of the furnace, boiler, and turbine metal, lowering the work life. The use of controlled-velocity electric drives will make it possible to increase the efficiency of operation during partial loads, to raise the maneuverability of the power-generating unit and to exclude the necessity of its shut-down.

The ecological indicators of the power industry in many respects depend on the level of consumption. Everyone loves to talk about the necessity of economy. To talk, but not to economize: "The economy must be economical." "A rich country, it will endure everything!" It did not endure. Every subscriber must firmly realize that a reasonable attitude to the use of electric power, both in production and daily life, is the basis of the ecological cleanness of its production. The cutting of every kilowatt hour reduces on the average by 360 grams the quantity of fuel burned at the TES, and consequently of emissions into the atmosphere as well. By rights of the main enterprise for the development of controlled-velocity electric drives, we are turning to all enterprises operating powerful mechanisms: Pumps, ventilators, compressors and smoke exhausters requiring changes in productivity.

We are ready to extend direct assistance in the solution of the noted problems, share experience, render consultations, conduct research, develop recommendations, select necessary equipment, develop referencing schemes, and bring the obtained results to practical introduction.

We are firmly convinced that the Republic of Armenia will really attain economic assistance and practical independence if in the future, too, it will improve and develop the foundation of foundations—the power industry. The replacement of obsolete equipment, the introduction of new capacities and modern technologies not only at the TES, but also in all spheres of the industry, are an extremely necessary and urgent direction of activity. It is harmful to be fascinated by backwardness! It is impossible to improve the ecological state of the environment through bare demands, the closing of industrial enterprises, the replacement of the electric light by a kerosene lamp, and the electric drive—by cart traction.

Experts Deny Oil Pipeline Leaks Are 'Ecological Disaster'

PM0506141791 Moscow PRAVDA in Russian
31 May 91 Second Edition p 4

["Impact" report by correspondent S. Cheremin: "Ecological Disaster?"]

[Text] In a television news bulletin the British company ITN reported that it had information on a new ecological disaster in the USSR. It could be comparable in scale to the "accident at the Chernobyl Nuclear Power Station." According to ITN's information, "a vast area of Siberia the size of Western Europe is gradually being destroyed as a result of oil leakage from defective oil pipelines."

Our correspondent S. Cheremin asked specialists from the Main Oil Transportation and Supply Administration and the Central Control Administration, which supervises oil pipeline operations, to comment on the information. Here is what they said:

There are two types of pipeline in the country: industrial and main. The latter is used to carry oil over long distances, and there have been no serious accidents involving them this year. There was a ruptured pipeline in the vicinity of Syzran, but the consequences of that were swiftly dealt with.

Industrial pipelines are used to transport oil from the well to where the main pipeline starts. As a rule they are manufactured from small-diameter pipes. In the first four months of this year there were around 900 accidents on industrial pipelines in West Siberia. Unfortunately, the number is increasing. It is due to the fact that industry is failing to supply enough pipes for the capital repair of pipelines. In the first four months of 1991 supplies of pipes were down by 123,000 tonnes. Oilmen frankly admit that things are expected to get worse.

The numerous breaks in industrial pipelines are certainly having a bad effect on the ecological situation in the region. But there are no grounds for comparing the consequences of the accidents here to the disaster at the Chernobyl Nuclear Power Station, the specialists stressed. Although the damage to nature as a result of oil spillage should not be underestimated either. In West Siberia, a large part of which is bog, it is an extremely difficult task to remove puddles of oil or clean polluted areas. Sometimes the only way is to burn the oil-soaked land and then recultivate the area. The situation is complicated by the fact that there are major deposits in the region and the pressure of the oil in the pipelines is very high. So a large quantity of oil escapes between the accident and the completion of the cleanup operation. Everything possible is now being done, the oilmen assured the editorial board, to reduce ecological damage due to their activities to a minimum.

There are no general figures on the quantity of oil spilled as a result of accidents.

Uzbek, Turkmen Presidents Still Want Siberian Water

PM0306121991 Moscow MOSKOVSKIYE NOVOSTI
in Russian No. 19, 12 May 91 p 4

[Ak-Mukhammed Velsapar article: "Northern Rivers Give No Peace"]

[Text] Uzbek President I.A. Karimov and Turkmen President S.A. Niyazov signed an intergovernmental treaty of friendship and cooperation between the two neighboring republics in Ashkhabad on 21 April 1991.

A press conference was held after the treaty had been signed. "Our republic is tired of living with outstretched hand," Uzbek President I. Karimov said. "We do not intend to ask the center for anything more. We plan to establish our own market prices for all raw materials exported from the republic. The prices will be no lower than those found on the world market."

The painful subject of the Aral Sea was also raised at the press conference. Those present heard a proposal to revive the scheme to divert part of the water in the Siberian rivers to Central Asia. The idea is that the water will return to Russia in the form of cotton, vegetables, and so forth. For this to happen, the "know-all writers" who speak out in the USSR Supreme Soviet against this scheme must be restrained. Those writers should come to Central Asia in August to see what it is like here in summer without water. They must get a real feel for the needs of the region, where some 32 million people currently live; that figure will have doubled by the year 2005. The "know-all writers" propose that water be used sparingly. That would require no less than 21 billion rubles in capital investment alone! But for that money part of the water in the Siberian rivers could be diverted to Central Asia. The audience greeted these words with rapturous applause.

I cannot agree with that attitude.

We are still having huge difficulty in shaking off the great-power mentality. This shortcoming is not only widespread beyond the Kremlin walls. I will risk reminding our two presidents of a Turkmen saying: "Take care of the little you have: It will save you from the fate of coveting what others have"....

There is a lot of water in Siberia, of course. But we would do better to invest our money in trickle irrigation and in lining all our irrigation ditches and water conduits with concrete. It is also worth thinking about switching the Central Asian republics to less moisture-loving crops: Grapes, figs, persimmons, olives, apricots, and peaches.... And it is time we finally abandoned the practice of forcing cotton growing, which is taking our last water reserves from us. In Turkmenistan there is virtually no clean fresh water left, apart from a few mountain streams at the foot of Kopet-Dag.

In ecology there are no royal roads. Consequently, even presidents should not self-confidently interfere in the work of the gods and try to refashion continents in their own way. Let the Earth remain as it was when it gave birth to us all, rather than mutilate it with all kinds of schemes and construction projects of the century. Let the presidents reconcile themselves to the fact that they are not going to have Siberian water and learn to cherish their own. Let them get no more ideas about the Yenisey.

Following the press conference, I was once again persuaded that the newly-fledged presidents of Central Asia lack constructive opposition. Without that opposition it is hard for them to deal with their unexpectedly acquired power. The absence of democratic institutions and opposition parties stimulates the growth of authoritarian attitudes not only in the leaders themselves but in society as a whole.

Japanese Businesswoman Outlines Aid Plans for Aral Sea

91WN04674 Moscow IZVESTIYA in Russian
9 May 91 Union Edition p 7

[Article by B. Reznik, IZVESTIYA correspondent in Khabarovsk: "Will Mrs. Hayasi Help the Aral?"]

[Text] Mrs. Hayasi is the director of the Tatibana Trading Company. She is a successful businesswoman who tirelessly flies throughout the world, the mother of five children, a grandmother, and an outstanding public leader... For many years Hayasi-san has been a member of the board of directors of the "Japan-USSR" Society of the Higa prefecture. At her initiative, Japanese children have the opportunity to rest each summer in the Young Pioneer camps in Khabarovsk Kray, while Soviet children visit Japan during their vacation. She is also the organizer of humanitarian aid to the residents of our kray in the sum of many millions of yen.

Mrs. Hayasi opened her company's representation in Khabarovsk and Riga, and developed several joint enterprises. In all that concerns business she is very restrained and has little to say. Yet recently she returned from a trip to Kazakhstan, phoned the correspondence office, and said that she is ready to tell of her plans to participate in saving the Aral.

It is no accident that Hayasi-san was invited to represent the Japanese business world at the international "round-table" discussion for protecting the Aral Sea which was held in Alma-Ata. The fact is that she carefully studied the problem of the Aral from documents and publications and went to Kazakhstan with ideas and knowledge of Japan's capacities for resolving the Aral question.

[Correspondent] Hayasi-san, I know that you did not limit yourself to mere participation in the meetings, but that you flew to the most remote areas in the Aral and studied the problem on site, so to speak. Has your desire to resolve this question not waned?

[Hayasi] Why no! I had to see for myself the abandoned settlements, to find out how great the infant mortality is in the region, and how immeasurable the grief of the people is, in order to understand that the Aral's troubles are all-human troubles. And I decided for myself—I will do everything to implement a large-scale project—to return water to this sea, and to turn the settlements on its shores into oases.

[Correspondent] It is a noble intention. However, the project will cost many billions, and even with the stable financial position of the Tatibana Trading Company, is it not overwhelming?

[Hayasi] Not only the mightiest company, but even an individual country is not strong enough to implement this project. Serious international efforts are needed. However, Japan, I believe, could take on a special role in this cooperation.

As we know, the water level in the Aral is receding at a catastrophic rate because water is being wastefully diverted from the Amur and Syr Darya Rivers which feed into the Aral Sea, and used for watering cotton and rice plantations. This excess consumption has disrupted the underground system of water circulation in an inadmissible manner. Can this be corrected? Yes, it can. Japan possesses the modern technologies which make it possible to radically change the irrigation systems and reduce water consumption by over 60 percent without reducing the production of rice and cotton.

Another problem is the salt-ridden soil. By returning water to the Aral, we may eliminate the salty soil and turn it into fruitful land which yields rich stable crops. And once again, Japan has the experience for such work. We gained it in a number of countries of the African continent.

[Correspondent] Hayasi-san, once again I return to the mercantile question—from what source do you expect to get the means?

[Hayasi] We spoke about this with Kazakhstan President Nazarbayev. I, for example, intend to organize in Japan a branch of the Kazakhstan Committee for Protection of the Aral Sea, which, I hope, will be joined by representatives of our major firms, concerns, state and non-state organizations. Investing funds into this project, knowing the current difficult situation of your country's economy, we, of course, cannot expect to receive profits very soon. Contracts on flooding the Aral and improving its lands must be long-term, based on great trust, courage, and an attitude toward prospective cooperation. And then there must be the understanding that the Aral represents a great set of problems, some of which will require a long time to work out. For example, I visited a former fishing village where the people have long suffered from lack of drinking water. They are sick with intestinal and other diseases because they must use water which, in the opinion of the sanitation services, is suitable only for cattle. This problem is characteristic also for other Aral settlements. I asked to be sent samples of such water so that Japanese specialists could study it. After all, they have assimilated the technology which allows them to purify harmful household and industrial sewage to the point where the water becomes improved, and once again suitable for drinking.

[Correspondent] You are assuming a heavy burden. The Aral's problems, I believe, do not promise great prosperity for your business, or in any case certainly not rapid prosperity. Nevertheless, you are agreeing to this. Why?

[Hayasi] I do not want to use lofty words. That is not the custom in my country. Yet I wish your country well with all my heart. I want to help Gorbachev in his efforts to

solve the country's economic problems. We, business people, must think not only about a quick profit, but also about the long-term prospects. If only we could remove the numerous obstacles in this path.

[Correspondent] Which ones, specifically?

[Hayasi] Oh, I cannot name them all. While before in your foreign economic activity you had all prohibitions, now Gorbachev has seemingly spilled the basket of toys and said to all: Play freely. Everyone has rushed for the toys without knowing where to put them away later, what shelves to place them on. As a rule, the people who deal with foreign economic activity in your country today are those who do not understand anything about this, those who do not know the elementary rules of the market. This leads to confusion, and many contracts which no one intends to fulfill. Then there are also the totally unpredictable directives, corrections, and limitations on payments. For example, upon agreement with the Eksportles Association, our company bought half a million dollars worth of goods in the United States. It prepared them for shipment to the USSR, but then suddenly received a telegram: Do not ship the goods, we are prohibited from paying for them. And so, since September of last year the cargo sits at the customs warehouse. Every month we are incurring greater losses—paying for the storage.

...I saw Mrs. Hayasi off at the Khabarovsk airport when she was leaving for Japan. Two serious young customs agents zealously dug through her small purse which contained her personal belongings. Seeing this, I burned with shame. What did they expect to find there? What can a law-abiding person, a friend, take out of our poor country?

I apologized to Hayasi-san. Putting her things back, she smiled knowingly and then suddenly said two words in Russian: "It's a shame, these instructions..."

REGIONAL AFFAIRS

French, German Ministers Meet on Carbon Dioxide Reductions

LD0106191691 Hamburg DPA in German 1348 GMT
30 May 91

[Excerpt] Paris (DPA)—Federal Environment Minister Klaus Toepfer and his French counterpart, Brice Lalonde, today agreed on joint steps for reducing carbon dioxide emissions to counter the greenhouse effect. In a joint declaration, the two ministers came out in favor of a progressive taxation on fossil fuels in the EC. To avoid international commercial disadvantages, appropriate measures would need to be taken in the framework of the OECD. [passage omitted]

German-Spanish Asterix Program Furthers Solar Energy, Chemical Processes Research

91WS0213X Duesseldorf VDI NACHRICHTEN
in German 1 Feb 91 p 23

[Article by Andrea Steinert: "Sun Finding Its Way Into the Test Tube"; first paragraph is VDI NACHRICHTEN introduction]

[Text] Madrid, 1 Feb (VDI-N)—Chemistry should open new applications for solar energy. Asterix is delivering its first findings. Solar chemistry—behind the term is the desire to use the sun as an energy source for chemical processes. In Almeria, Spain, the DLR [German Aerospace Research Institute] has begun an experiment in this area.

The flame is virtually colorless. And your eyes blink, dazzled, into the bright blue sky as they attempt to make out the illusive contours—yet on an opposing metal collector the heat is projected in outward moving shapes.

What is burning here at a height of approximately 80 m on a solar tower on the edge of a field of solar collectors under the southern Spanish sun is synthesis gas—a quite common basic material for the chemical industry, which can be obtained by reforming methane. The experiment definitely has international significance. It is intended to demonstrate that solar energy can be fed into an important chemical process, methane reforming in this instance, instead of using gas, oil, or nuclear energy.

"Internationally, this is the first test to break out of the laboratory," reports Dr. Manfred Boehmer of the German Aerospace Research Institute (DLR) in Cologne-Porz. He is the project leader for the Germans. The DLR and Ciemat (Center for Energy, Environment, and Technical Investigations) in Madrid are participating fifty-fifty in this 1.6-million-German-Mark [DM] project called "Asterix". Asterix is the acronym for "Advanced Steam Reforming of Methane in Heat Exchange".

Project experiments have been underway since last October and are planned to continue through the middle

of this year. A team of a total of 13 Germans and Spaniards takes turns looking after the project on the "Plataforma Solar de Almeria", a German-Spanish test center in Andalusia. In the past years, among other things, a solar tower installation essential to the project (solar collectors with a solar tower) has been established here.

"Since electrical current can only be transported economically for a few hundred kilometers, in Germany it is possible for us to use solar energy on a large scale only if it is transformed chemically," believes Boehmer. However, in contrast to the generation of solar power, solar chemistry is largely new territory. With Asterix two objectives are currently being pursued: On the one hand, characteristic problems arising in the manufacture of a product with solar energy are to be solved using a process familiar to the chemical industry. On the other hand, the researchers are investigating the conditions under which solar energy can be stored and transported.

The example of methane reforming was an obvious choice since it is a heavily endothermic reaction, i.e., one in which energy added in the form of heat can later be released via a reverse chemical reaction. The significance: With such an intermediate step, solar energy can be used at any location. With these experiments the team is also feeling its way into the problematic production of hydrogen. Many see the solution of the energy problem itself in this energy medium.

The real goal of the researchers is thus to modify the familiar production process on the basis of this new energy source, sunlight, which is not equally available everywhere, i.e., to factor in clouds and darkness. Since in the past it was no longer possible to continue production with a constant temperature, e.g., exactly 820 degrees C—Asterix should demonstrate that the sun can nevertheless deliver the necessary energy.

Thus far, the tests have shown that the newly developed "steam reformer"—a system adapted to the sun as its energy source and in which the reaction takes place—functions well under constant temperatures (stationary conditions). It can produce high quality synthesis gas. In the coming months the team will investigate the quality of synthesis gas obtained under fluctuating temperatures.

The DLR project leader feels that temperature fluctuations can, in principle, be brought under control. For example, because of its large size and by means of insulation, the reformer will lessen fluctuations. Also, if the synthesis gas is not used immediately, a storage tank will compensate for different compositions.

Heat accumulators, for example, a boiler filled with ceramic masses, or a fossil heater, could offset dropping temperatures, if this expense is justified. But, above all, according to Boehmer, industry is urged to develop processes which are less dependent on constant temperatures than in the past.

The steam reforming process in Almeria consists of two closed cycles linked via a heat exchange process: One air cycle which provides the heat for the reaction and which was developed in a past project under the name "GAST" (Gas-Cooled Solar Tower) as well as the reaction of steam and methane to which the Asterix project is specifically devoted. The necessary heat for the reaction is thus transferred by convection (through gas) rather than by radiation (open flame) as is conventional.

The steam reformer is approximately 7 m tall and has a total diameter of about 80 cm. It is located above the collector on the platform of the solar tower. Commercially available nickel-plated Raschig rings serve as the catalyst supporting the reaction in the reformer. The molar ratio of steam to methane is three to one. Among other things, the series of test should reveal the optimum relationship between temperature, pressure, and the steam: methane ratio. The 50 kg of synthesis gas recovered per hour is analyzed with a gas chromatograph and then burned off—thus far unused.

Experts warn against expecting too much from solar chemistry in the short term. It is still "essentially in the pure research stage". The next step would have to be actual construction of solar tower power plants on the industrial scale, with a capacity of from 30 to 100 MW. The power plant in Almeria has a capacity of approximately 1 MW. Jose Antonio Rodriguez Povedano, Spanish test director at Almeria, thinks it will be 20 to 30 years before systems like that used in the Asterix project will operate on a larger scale.

AUSTRIA

Business Environmental Policies Outlined

91WN04154 Vienna DIE PRESSE in German 5 Apr 91 p 18

[Unattributed Article: "Environmental Protection Strategies Must Be Become Credible: Credibility Gap Also Affects Established Firms"]

[Text] Vienna—Once more environmental protection is increasingly on everybody's mind and not only since the great catastrophe in the Persian Gulf, the effects of which on the environment are impossible to assess at the present time. In the last decade, environmental protection has become an existential issue for civilized mankind and hence also for every business enterprise. Technology, economics, and ecology are competing against each other.

What arguments favor environmental protection from an entrepreneurial point of view? How should business sell its ideas to the public? Where can it expect support? Individual business enterprises are faced by a host of such sensitive questions. Some business sectors can point to already existing projects, even though they

might not be noticeable at first glance. Others, however, have to fight problems related to acceptance and credibility.

Ecology: A Long-term Project

Alcatel Austria, one of the biggest companies in telecommunications, subscribes to the idea that ecology is a long-term project. For the past six months, Alcatel has had an environment-related staff position that is directly responsible to the director general, and a so-called "Environmental Board." Their activities extend primarily over internal matters where employees are given a key role to play. They are also to be sensitized to the problematic aspects of the issues involved. Wolfgang Rotomer, head of the company's press bureau, said it is the purpose of this policy to prepare the ground so that "environment-related ideas" can spill over to the outside. Problems are cleaned up "in house," and the "Environmental Board" gives employees the opportunity to contribute their ideas.

"In the long run, a business has no chance for survival if it fails to consider the environment," says Hans Plescher (Alcatel environmental protection manager). He went on to say that the manager of the future has to command an entirely new technological expertise (e.g. knowledge in assessing the consequences of new technology, knowledge in the production of recyclable products), and that economic considerations should no longer weigh in as heavily—at least not in the beginning. Early in the environmental debate, the cost-effectiveness argument was used very prominently, and it is still visible in the fact that so-called "environmentally safe products" (all the way from writing paper to kitchen towels and tissues) are as a rule considerably more expensive than "regular products." Plescher thinks that this situation is perfectly justified during the transition phase because certain investments have to be made. But then, one needs to try to get a handle on the cost situation.

When Alcatel introduces a new production process it applies the principle of cause and effect. The process is accompanied by its own control mechanism that watches materials used and waste produced. Recyclability of materials used is the highest criterium. The purpose is to avoid waste products starting at the factory. Concerning the disposal of waste products, Alcatel takes precautionary steps. Should a production process fail to satisfy either legal or internally established ecological requirements, the company then follows the principle of self-restriction, meaning it will forego this type of production.

Plescher said that the customer notices relatively few of the measures taken, but this does not mean that environmental protection is practiced as "art for art's sake." That would be little more than pretense. Specially targeted information is to convince the end consumer that as a rule telecommunications products do not endanger the environment. Certain components (especially batteries and mercury switches) can be returned by the

customer. When it comes to packaging—especially important with electronic equipment—one also experiments with new methods. The packaging of guidance boards was improved by the invention of wrapping material made of polyethylene which did not require the use of filling material (mostly the much maligned styrofoam). This invention was awarded the Austrian State Prize. Alcatel also took the very important step of drawing up a balance sheet of energy-related and ecological costs (in cooperation with the Institute for Ecological Economic Research).

This example shows that even business enterprises without immediately recognizable environmental problems can make substantial contributions and add to environmental education.

It is harder for the chemical industry. Some enterprises prefer to remain anonymous, not because they have something to hide—quite the contrary. After assorted accidents, this industry is fighting a credibility gap. Chairman Frick, of the Environmental Protection Committee of the Association of Chemical Industries, says that "environmental protection is synonymous with safety and means to us absolute honesty." The association and its members are striving for the widest possible disclosure—in particular openness and confidence-building measures (especially for timely information if something should go wrong and for removing a certain distrust associated with chemical firms) are seen as indispensable. Studies concerning certain problematic issues (such as air and water quality or waste disposal) are done in conjunction with recognized and independent institutions.

Special Difficulties Exist for Chemical Firms

These studies include examples and commentaries, and they are published. On the actual production level, contacts with mayors, other authorities, the local press, and especially the intensive cooperation with fire departments contribute to scaling down fear just as much as the targeted training of specific employees.

The association was the driving force behind the development, in conjunction with fire departments, of a program, available to the entire chemical industry under the title, "Safety and Chemical Production." Individual firms were informed of it through the use of videos and seminars.

A peculiarity of the chemical industry is its diversity in the size of enterprises. A few large conglomerates confront many small firms.

DENMARK

Increased Water Pollution Affects Fish Catch

91WN0419B Copenhagen BERLINGSKE TIDENDE
in Danish 3 Apr 91 p 7

[Article by Lis Lipschitz: "Indigenous Fish Are Disappearing"—first paragraph is BERLINGSKE TIDENDE introduction]

[Text] Increased pollution is affecting codfish and flounder in the Kattegat and the western Baltic. Herring is doing well. Its worst enemy is codfish. In order to stop the decline of codfish and flounder, the International Ocean Research Council recommends a 60 percent reduction in cod fishing in the Kattegat and the western Baltic, and a reduction of 20 percent for flounder fishing in the Kattegat.

Cod fishing in the Kattegat and the western Baltic should be reduced by 60 percent. And it would be well if flounder fishing in the Kattegat were reduced by 20 percent.

This advice comes from the International Ocean Research Council and is found in the book *Oceanic Life* which the Forest and Nature Board published yesterday. The Ocean Research Council has since the middle 1970's kept track of the quantity of codfish, herring, and flounder in the North Sea, Skagerak, Kattegat, and in the western and eastern Baltic.

It is in the Kattegat and the western Baltic especially that environmental changes have affected the fish population. The flounder catch in the Kattegat has declined radically from 13,000 tonnes in 1978 to 2,000 tonnes in 1988. The spawn population has fallen from 30,000 tonnes in 1978 to 8,000 tonnes in 1982 and has remained at that level. In the western Baltic, the catch has fallen from 4,000 tonnes in 1978 to 300 tonnes in 1988.

In the same period, the cod catch in the Kattegat dropped by half and by 1988 was down to 6,000 tonnes. The spawn population was also halved to 8,000 tonnes. In the western Baltic, the cod catch was reduced from 24,000 to 9,600 tonnes in the same period, while the spawn population has gone from 19,000 tonnes to 13,000 tonnes.

The cause for the decline in the flounder population is the change in the character of the fish spawning grounds along the coasts due to the discharge of nutritive salts which have turned the sandy bottom into a mud bottom with filamentous algae. This seaweed rots easily, causing an oxygen deficiency that destroys the spawning grounds of the flounder young.

The decline in the cod population in the Kattegat and the Bael Sea is due, among other things, to heavy fishing. The cod's eggs and larvae are normally carried with the stream from the Bael Sea to the Kattegat, but in recent years the influx has fallen off. This can be ascribed in part to the destruction of eggs by environmental factors, but also to the fact that the spawning grounds have been ruined by seaweed.

While flounder and cod suffer from pollution, herring do well and are even on the increase. This is possibly because the increased plankton growth due to the nutritive salts make good food for the herring larvae. Coupled with this is the fact that cod is the herring's worst enemy and when the cod population goes down, there are not as many cod to eat the herring.

The article "Oceanic Life" is written by Else Nielsen of Denmark's Fish and Ocean Studies. She feels there is little hope that cod, flounder, or Norway lobster will be seen again as long as the condition in our seas remains as it is.

But it is expected that herring, sticklebacks, dab, sole, and turbot will return to areas that have been affected by oxygen deficiency.

FRANCE

Clean Transportation Projects Noted

91AN0314X Paris RECHERCHE TECHNOLOGIE
in French Feb 91 pp 11-13

[Unattributed article: "Initial Evaluation of PREDIT"]

[Text] Eight months after the launch by Michel Delebarre [minister of state for urban affairs], Roger Fauroux [minister of industry and land management], and Hubert Curien [minister of research and technology] of the R&D program for Innovation and Technology in Ground Transport (PREDIT)—one of whose major guidelines is consideration of environmental imperatives—the initial evaluation confirms the strong mobilization of the sectors involved as well as the professional interest in research and development in the field.

PREDIT's first term was marked by a certain number of events: first, the establishment of a supervisory body including 21 scientific and technical committees and study groups on environmental, energy, and security matters; second, the launch of well-defined major technological programs, such as those on the Clean Economical Car (VPE) and the Future High-Speed Train (TGV), or programs still under development on road safety and multimode transportation. In addition, the transition of the countries of Central and Eastern Europe to a market economy should have a significant influence on European transport, especially ground transport.

Resources Employed

PREDIT's start-up protocol projected a program budget of 8.3 billion French francs [Fr] for the 1990-1994 period, i.e., an annual average of Fr1.66 billion. R&D expenditure for 1990 amounted to Fr1.5 billion, including approximately Fr490 million in state funding. Compared to 1989—a year of program preparation—this represents a very significant increase in expenditure, on the order of 66 percent as regards state funding.

This major increase—which is obviously a source of satisfaction for trade—is attributable primarily to three factors: The fact that research in ground transport in 1987-1989 suffered a substantial setback from the budget economies of 1986; the increasing importance of EUREKA [European Research Coordination Agency] projects; and the launch of major programs, the last two (VPE and the future TGV) having secured substantial credits.

According to the experts, this trend should grow in 1991 since these major programs will together tie up 40 percent of government funding.

Partnership

PREDIT's ambition is to strengthen the ground transport sector's coordination tools in the area of scientific, technical, and socio-economic research and to increase the coherence and efficiency of projects undertaken by the various partners. In this regard, the contribution of the major research bodies is especially important: The expansion of their activity to the transport sector will in effect make it possible to strengthen the link between basic research and technological developments, as well as to explore new ways for generating substantial profits in the future. We may cite, for example, current work in the VPE project on electric vehicles which, for certain key projects, could pool the resources of industry and of national and European research centers. Beyond that, in order to improve urban traffic and transport conditions, PREDIT partners have agreed to reinforce research efforts in the socio-economic field.

All these projects are indicative of the government's determination to invest heavily in medium-term research through key programs. In addition, European integration is one of the major guidelines for PREDIT, the same as it is for the EUREKA programs, which by their quality constitute a major stimulus for such cooperation. In this regard need be mentioned the Prometheus and Carminat programs. The latter is now completed and the remarkable results achieved and exhibited at the latest Automobile Show demonstrate once again—if that were necessary—the worldwide interest in this effort.

[Box, p 12]

Multimode Transportation

Multimode transportation consists of the successive use, for a single shipment, of various modes: sea, road, rail, river.

A research program is currently under development by the PREDIT "Goods Transport" Expert Committee, bringing together carriers (road, rail, port, air), operators, representatives of industry, and specialists from research organizations. Its purpose is to make the system more efficient by achieving a degree of industrialization that will make it possible to save time, transport capacity, and organization.

These programs will cover:

—High-performance transshipment and handling systems;—Logistics and services;—Materials and equipment.

All research projects will represent approximately Fr500-550 million for the next four years.

[Box, p 12]

The Future TGV Program

Since its entry into service in 1981, the southeast TGV has proved itself an economic and commercial success and has dramatically highlighted the basic qualities of rail transport: safety, protection of the environment, and energy conservation.

To respond to these requirements, GEC-Alsthom proposed to the National Railway Company (SNCF) and to the public authorities an ambitious four-year R&D program covering TGV rolling stock. The aim of this Fr445-million program including Fr150 million in government funding—is the design of a new generation of trains that can operate at speeds of 350 km/h on international runs. In addition, shock waves produced by the entry of the TGV into tunnels will be studied using a model, the equipment of which can be made on the strength of support by the Ministry of Research and Technology (MRT) and the SNCF; the equipment will be designed and built by the Sardou company.

Technological Breakthrough: TGV-2N

The future TGV program was preceded by a technological breakthrough in the form of the "two-level TGV" (TGV-2N) launched in 1989. Its aim was to increase by 40 percent passenger capacity of the current TGV. Research was thus undertaken on the use of lighter materials and their crash resistance at high-speeds (a study which so far has not been completed) in order to maintain the same stress on the railbed as a one-level TGV.

This program, funded for Fr32 million over three years (MRT's share being Fr12 million), is under the leadership of Alsthom and the SNCF. To date, the program has resulted in the construction of the first prototype body (a second prototype is in the pipeline), which will undergo compression trials at the SNCF test site in Vitry-sur-Seine.

[Box, p 13]

The Clean Economical Vehicle Program

The emission into the atmosphere of road vehicle combustion gases constitutes one of the major causes of atmospheric pollution, especially in urban areas. It is the reason for which the public authorities and the two national automobile manufacturers have agreed to join forces in an ambitious research program to develop an environmentally clean and economical vehicle.

This Fr1.2-billion program, which will cover a period of eight years, will explore all possible means eventually leading to significant reductions in atmospheric pollutant and CO₂ automobile emissions. A protocol for this purpose was signed with Renault and Peugeot on 23 January 1990; its purpose was to bring together industry and laboratory resources to deal with the overall

problem through a comprehensive approach covering the fuel system, engine, and antipollution processes.

Some of the program's are:

- To examine alternative solutions to make it possible, over the medium term, to enter a new stage of pollutant emission reduction. These are in particular: the design of a new two-stroke engine and the study of devices allowing the large-scale use of substitute fuels that produce less CO₂, as well as possible new developments in petrol-based fuels;
- To undertake the development of electric vehicles for urban and road traffic (the latter with turbogenerators) and of engines running on hydrogen or fuel cells.

We should mention that the EC has just given its approval for the entire "Clean Economical Vehicle" program, which can now enter its operational phase.

Peugeot Starts Up Parts Recycling Plant

91AN0397X *Toddington NEW MATERIALS INTERNATIONAL in English Apr 91 p 1*

[Text] The dismantling of wrecked cars so that the materials used inside can be recycled is being studied by Citroen and Renault. Renault's experimental plant at Flins is already operational while Peugeot SA's (PSA) at Saint-Pierre-de-Chandieu, will start running in June.

In France, only a quarter of the material in a car is currently recycled leaving 350,000 tonnes (mostly plastic, rubber and glass) to be dumped every year.

PSA's new 20 million French francs [Fr] recycling plant is expected to "process" 7,200 wrecks during its first two years of operation. But plastics will be sorted out for recycling only where it can be done profitably.

To ease the recycling process, PSA makes 90 percent of the plastic components on its cars from seven polymers. However, not all the plastics used are recyclable and in the new PSA facility, the parts will be sorted and those which are combustible will be burnt in an incinerator.

To assist the recycling function, PSA and Renault have agreed a system of marking the polymers which will be used on all their new models. Rover Group in the UK started a similar system at the start of the year.

Meanwhile, Renault has just given approval for a polypropylene recycled from battery cases to be used for a component for the Clio. The project was carried out in partnership with recycling specialist C2P and chemical company Atochem.

GERMANY

Report Claims U.S. Concealing Environmental Damage*LD0406122791 Hamburg DPA in German 1116 GMT
4 Jun 91*

[Excerpt] Cologne (DPA)—Numerous military sites of U.S. forces in the Federal Republic are contaminated with highly poisonous substances. A secret Pentagon document names 358 contaminated sites, the WDR [West German Radio] television magazine "Monitor" reports in a program tonight. In Rhineland-Palatinate and Hesse alone, 55 time bombs had been ticking away for years. According to "Monitor" the extent of the environmental damage was deliberately covered up by the Americans before the responsible German authorities.

As early as in November 1990, the Berlin daily newspaper TAZ, writing about an internal report of the U.S. Army, had reported considerable environmental damage at 358 U.S. Army sites, which would cost between 162 and 580 million dollars to repair. [passage omitted]

Minister Offers Soviet Military 'Financial Incentives' To Identify Pollution*LD0206132691 Hamburg DPA in German 1234 GMT
2 Jun 91*

[Text] Bonn (DPA)—Before departing for Moscow today, Federal Environment Minister Toepfer announced his intention to pay a "finder's reward" to the USSR Army to discover all the ecologically polluted USSR establishments in the new laender. On the RTL-plus talk show "This Week," Toepfer said in Cologne: "A financial incentive will probably lead to the military giving us the names of all the areas more quickly, including those hitherto unknown." It was basic interest that the names of ecologically contaminated and polluted areas were given to the German authorities as quickly as possible. "We must work together closely on this to prevent an ecological disaster," Toepfer said. He pointed out that the area of the USSR Army's establishments in the former GDR totalled around 280,000 hectares.

Soviet Defense Minister, Toepfer Meet on Ecology Concerns*LD0306165691 Moscow TASS in English 1629 GMT
3 Jun 91*

[By TASS diplomatic correspondent Sergey Ryabikin]

[Text] Moscow June 3 TASS—"The Soviet Union has neither nuclear nor chemical weapons on the territory of the former German Democratic Republic," Soviet Defense Minister Dmitry Yazov said today at a meeting with Klaus Toepfer, the minister for the environment, conservation and reactor safety of the Federal Republic of Germany.

Toepfer told journalists that both ministers had agreed on improving cooperation between the two countries in the field of ecological condition of territories occupied by the [Soviet] western group [of forces].

At present, Toepfer said, Soviet troops have been withdrawn from 100-120 out of 1,000-odd facilities on the territory of the former GDR. "Detailed" information about the condition of the environment is available on two to three percent of the territory occupied by the troops.

It is necessary to size the problem in an objective way. This is "a great and enormous task" because Soviet troops are occupying 250,000 hectares and therefore "a year or a year and a half, rather than months" are needed to obtain a detailed picture.

The German side, the minister said, has serious apprehensions about the contamination of territories on which Soviet troops are deployed, but the aim of the talks in the USSR was to discuss this issue in order to get a better insight into the problem.

According to Toepfer, the Soviet Defense Minister "insisted on immediately starting the construction of housing for Soviet soldiers". The FRG allocates material resources for this purpose. Otherwise, "the plan of Soviet withdrawal from East Germany can be disrupted".

Toepfer arrived in Moscow on Sunday to attend the Soviet-German commission for cooperation in the field of nature conservation.

Federal Cabinet Bans Asbestos*LD2905124791 Berlin ADN in German 1222 GMT
29 May 91*

[Excerpt] Bonn (ADN)—The Federal Cabinet today adopted an ordinance banning asbestos. The aim of the decision is to free the Federal Republic, as the first country in the world, from the dangerous substance by the end of 1994. This is to be achieved by a comprehensive ban on import, production, and use of asbestos. Federal Labor Minister Norbert Blum stressed in Bonn that the new decision is a consistent continuation of the policy started in 1990 of eliminating the strongly carcinogenic substance. [passage omitted]

EC's Delors To Press for Bitterfeld Environmental Aid*LD0706075491 Hamburg DPA in German 1805 GMT
6 Jun 91*

[Text] Bitterfeld (DPA)—Delors will "press for Bitterfeld to become a center of environmental aid from the EC." "You will see what practical cooperation and solidarity mean in our, in your, European Community," the politician said today at Bitterfeld, a central town in a region heavily damaged by the chemical industry, lignite mining, and energy generation, where he named a square after former French Foreign Minister Robert Schuman.

Delors told journalists in Bitterfeld that EC advisers would be sent to Saxony-Anhalt.

He further announced that the Community will provide for 40 percent of the public funds available to Saxony-Anhalt under a support program worth 2.5 billion marks. Earlier, Delors was given a tour of the Bitterfeld Chemie AG works. Later he visited recultivation projects at the desert-like areas left behind by open-cast mines around Bitterfeld.

ITALY

Nuclear Reactor Consortium's Activities Presented

91MI0275X Rome *FINMECCANICA NOTIZIE*
in Italian 28 Feb 91 p 2

[Text] The Genesi (High Intrinsic Safety Electronuclear Generators) consortium established by Ansaldo and Fiat Ciei in May 1990 to promote, study, develop, and design nuclear reactors with greater intrinsic and passive safety has signed an initial design and study contract valued at 15.5 billion lire with ENEA [Italian Committee for R&D of Nuclear and Alternative Energies].

Ansaldo's division and Fiat Ciei will work on this contract during 1991 and activities will cover the following major areas of critical importance for the next generation of nuclear reactors:

- Subsystems and components with a high intrinsic and passive safety level; including the development of innovative valves as well as passive actuation and shutdown systems;
- advanced containment systems to ensure that even following serious accidents the evacuation of the population around the plant will not be necessary;
- core and fuel: studies will concentrate on intrinsic and passive systems designed to shut down the core;
- man-machine interface, focusing on accident diagnostics and reducing the risk of operator error.

The contract covers the first part of a three-year program of activity already agreed upon by ENEA and Genesi. The program falls within the broader context of activities by ENEA, ENEL [National Electric Power Company], and private industries to develop an innovative nuclear system as indicated in the National Energy Plan within this time frame.

NORWAY

Energy Knowledge, Technology Seen Marketable

91WN0417A Oslo *AFTENPOSTEN* in Norwegian
19 Apr 91 p 4

[Article by Ole Mathismoen: "Norway Can Sell Energy Knowledge"—first paragraph is AFTENPOSTEN introduction]

[Text] The threat of climatic changes has gotten a number of governments in Europe to order large-scale energy savings. Norwegian industry knows a great deal about this, and can sell its knowledge.

Jan Kerr Eckbo from the consulting firm of Aukner, Neumann, and Eckbo Inc. believes the knowledge can become a gold mine. During a hearing on the climate, arranged by the Socialist Left Party and Greenpeace in the Storting yesterday, Eckbo said that most countries are enormously wasteful with energy. Norway tops this list.

In Western industrial countries only a tenth part of the energy that is produced is put to practical use. When it is simultaneously known that 90 percent of the energy is produced from fossil fuels such as coal, oil, and gas, the pollution is significantly greater than it needs to be.

"With investments, energy efficiency can be increased from 10 to 50 percent. Countries such as Denmark, Germany, and Great Britain have recognized this, and in the coming years a large market will open up for technology and knowledge about energy saving.

"We must organize our society differently, build a new type of houses, get new machines and new habits," said Jan Kerr Eckbo, and opined we can stand before an growth in industry with very many new working places if we correctly direct our efforts in this new market.

Debohra Wilson from the University of Lund warned those who want to wait with measures to reduce emissions of the greenhouse gas carbon dioxide until sure proof of climatic changes is available.

"It becomes more difficult, the longer we wait. With already known technology, it is possible to reduce the emissions, for example in Sweden, by 35 percent by the year 2005, and the investments themselves are profitable for businesses and for consumers," she said.

At the hearing, the leader of Greenpeace international climate programs, geologist Dr. Jeremy Legget, drew a somber picture of the climatic threat: "The same researchers who rejected a hole in the ozone layer before they saw the proofs and who have operated the whole time with lower estimates about how rapidly the ozone layer is being broken down than measurements have now shown, are more or less confident that the climatic changes will be catastrophic for us."

The Progress Party's Pal Atle Skjervengen expressed the opinion that such doomsday prophets are without roots in reality. "Two of the UN panel's participants have recently declared that the temperature increase can hardly be more than 1.2 degrees by the year 2100. This is significantly less than what other researchers estimate. Besides, the climatic changes will very certainly give some positive effects. Perhaps the advantages with a one-degree increase are greater than the disadvantages," he said.

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